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Stronger Faith Shown in Outlook

Indications of Heavy Demand for Steel in Formative Stage Impress the Industry—New Buying Still Under Check, However, as Inventory Season Draws Near—Automotive Interests Negotiate—Pig Iron Sales Reach Huge Total

CONFIDENCE in the early appearance of active steel buying to meet the needs of a sound industrial and commercial situation is growing but new tonnage still is under restraint. Inventory and taxation considerations at this season apparently are strong curbing factors. The question of price also has its bearing but this now seems less important than in other recent weeks. It is known that with many consumers, stocks are down to the vanishing point and it is something of a struggle for them to piece out their way until they enter the market freely.

Incoming business in steel in November has shown little if any change from October but with old bookings is enabling the mills to run at 70 to 80 per cent.

Such slight changes as are developing in steel prices seemingly are in the direction of greater firmness. With the absorption of numerous low price stock lists, the sheet schedule is better maintained. The larger makers of plates, shapes and bars are holding their prices but smaller mills are making concessions of $2 per ton on plates and bars. A Mahoning valley bar producer booked 6000 tons for first quarter at the full 2.40c price. Bands are more uniform.

Excepting for a slight change in September, IRON TRADE REVIEW composite of fourteen leading iron and steel products shows the first upward turn in thirty weeks. Due to the strengthening pig iron market this week's composite is $42.80. Last week it was $42.63 and two weeks ago $42.74.

Iron Sales Are Huge

Pig iron buying has continued to go ahead, though less actively this week than last, and total bookings in November, it is believed, easily will exceed 1,000,000 tons. Latest estimates give Cleveland 300,000 tons, Chicago 250,000 tons, Buffalo 250,000 tons, the South 200,000 tons, the East 150,000 tons, Pittsburgh, 100,000 tons, and a large scattering amount additional in the country at large. On this basis, the contracting for iron has been the heaviest since the early months of 1920. Prices have firmed up 50 cents to $1 per ton and numerous sales have been made on the higher basis. Purchases of the American Radiator Co. have reached 75,000 tons. The United States Cast Iron Pipe & Foundry Co. is credited with buying against a requirement of 150,000 tons.

Auto Buying Beginning

Automotive interests with promising conditions for 1924 are beginning to figure on heavy future requirements. Some buying has been done in strip and cold drawn steel. Preliminary negotiations for large tonnages for fine finished sheets for next year are under way. The builders want a reduction of $5 per ton from the present price of 5.35c which the mills are opposing though some would be willing to grant $3. At Cleveland a motor accessory manufacturer is inquiring for 15,000 to 20,000 tons of bar products for first half. The Ford Motor Co. has been a recent buyer of 10,000 tons of bars.

Railroad buying is still a market feature. The Pennsylvania rail order for 200,000 tons for 1924 now released gives 94,000 tons each to Steel corporation and Bethlehem mills and 12,000 tons to the Inland Steel Co. The Baltimore & Ohio bought 15,000 tons of tie plates. The New York Central is inquiring for 30,000 tons of tie plates and 105,000 kegs of spikes and track bolts. Car orders this week total 2000.

Resumption of iron and steel operations in the Ruhr region is assured following the signing of an agreement between the manufacturers and the French authorities according to IRON TRADE REVIEW weekly market cable from Europe. Exports, however, are limited to the monthly average of 1922.

New Work Is Heavy

Large structural projects are coming forward steadily. This week bids are asked on 18,000 tons for a telephone building in New York. Bridge jobs up for bids in New York total 16,000 tons with a large volume of railroad work now in the hands of engineering staffs. The week awards run 23,139 tons including 9800 tons for a power house at Kearny, N. J.

Business Trend and Chart Section Page 1473

Pig Iron Sales at Higher Level

Prices Move Up While Buying Continues in Large Volume—Total of Sales Estimated Well Over 1,000,000 Tons—More Makers Refuse To Quote for First Quarter—15,000 Tons of Basic Closed at $20

PITTSBURGH, Nov. 27.—Estimates vary as to total tonnage of pig iron closed for in the recent buying movement, the total here, however, is somewhat below that of other districts, notwithstanding heavy buying by brokers for speculation. It is understood not over 100,000 tons of all grades have been closed for. Buying introduced a week ago was carried over into the past week on protected quotations, makers since replacing the $20 figure with quotations of $22. Some sanitary ware and radiator interests bought first quarter tonnages at $20, base, for the No. 2 grade a middle interest purchased 3000 tons of No. 2 iron from the Youngstown Sheet & Tube Co. at $21, valley base. That maker now is quoting $22, minimum, as are the Struthers Furnace Co. and M. A. Hanna & Co. One or two others are quoting $22.50, valley. The Bethlehem Steel Co. is naming $22, Johnstown, Pa., taking the same freight rate to Pittsburgh as from the valley. Only small sales are recorded this week. Buyers are anxious to duplicate prices paid by other melters a week ago. Several inquiries are out for foundry grades below 1000 tons each, including one from C. L. Tittle, Blairsville, Pa., for 100 tons. One sale of gray forge iron involved 2500 tons at $21, Scottdale, Pa., for Pittsburgh delivery. Malleable still is available at $19, valley. Some makers are quoting $22, minimum. The last sale involved 6000 tons, to a broker, at $19. A scrap interest purchased 15,000 tons of basic iron at $20, valley, for resale. Most makers now are quoting $21, valley, although a nearby sheetmaker made a private arrangement at $19.50, Pennsylvania furnace, a large tonnage to be taken out this year. Two inquiries are current for approximately 500 tons each. Follansbee Bros. Co., also is negotiating for basic. Five bessemer inquiries are pending totaling 5000 tons, including one from the Pittsburgh Crucible Steel Co. for 600 tons. The Mesta Machine Co. wants 1000 tons, the Wheeling Mould & Foundry Co. is seeking 500 tons. Most valley makers now are quoting $23, valley. The Bethlehem Steel Co. quotes $23, Johnstown. At least two inquiries are out for low phosphorus iron. The Bethlehem company is naming $28. The Lebanon Furnace Co. and Stewart Furnace Co. quote $29.50, valley. The Duquesne Steel Foundry Co. bought 500 tons at $30, delivered.

Eastern Prices Advance

Boston, Nov. 25.—Much of the New England business for first quarter delivery of pig iron was placed at or close to the low levels of a week ago and, therefore, the recent advances have failed to bring in much additional buying except in small lots. The total tonnage placed during the past week was, however, heavy compared with the average through October and the first part of November. Buffalo furnaces advanced to a $21 base earlier in the week and at present are holding firmly to 50 cent differentials making the No. 2X price $21.50 Buffalo, or $26.42 delivered New England. In eastern Pennsylvania a general upward revision has taken place and many of the furnaces previously selling as low as $21 and $21.50 have advanced to a $23 base. One or two furnaces are still offering iron at a $22 base price, or $25.65 delivered but tonnage at this level is becoming scarcer daily. Virginia iron holds unchanged at $25.50 at the furnace. Alabama prices have recently advanced to $21. A fair tonnage of southern iron was placed in New England previous to this advance.

Production Statistics of Pig Iron, Steel Ingots and Castings for a Period of Years, Page 1510

Large Sales Are Made

New York, Nov. 27.—More than 60,000 tons of pig iron have been sold in the New York territory during the past week, which registers the biggest week's business in a long time. The American Radiator Co., bought 10,000 tons for shipment over the remainder of this year and during the first quarter of 1924 to its Bayonne, N. J., plant; the Warren Foundry & Machine Co., 10,000 tons for early and first quarter; the American Locomotive Co., 8000 tons for December-January; the Worthington Pump & Machinery Corp., 3000 to 3500 tons for first quarter for its various plants; the Richmond Radiator Co., about 2500 tons for first quarter for Norwich, Conn., and Uniontown, Pa.; the Gould Coupler Co., 3000 to 4000 tons of malleable and basic for early shipment; the Ingersoll-Rand Co., 1500 tons for early shipment and many other consumers bought and considerable new buying is under negotiation. The Burnham Boiler Corp., is taking bids on 5000 tons for first quarter and the New York Air Brake Co., for 2000 tons for first quarter. Another inquiry calls for 3000 tons, another for 2500 tons and a number of other good sized lots are under negotiation. Low prices again have been done during the past week, but with all this business added to their books, producers feel much more comfortable. There is a general tendency in the East to quote $23, base furnace, on foundry iron, plus 50-cent silicon differentials. It is considered unlikely that $22 base furnace now could be shaded on eastern iron. Buffalo foundry prices under $21.50, base furnace are disappearing and $21 seems to be minimum. Virginia foundry is held firmly at $25, base furnace. Southern foundry now appears firm at $21, base Birmingham, excepting for some outstanding quotations.

Buffalo Sales Enormous

Buffalo, Nov. 27.—The wave of buying has continued and it is estimated that as high as 250,000 tons have been placed here during the past 10 days. Two of the furnaces have signalized that their wants in bookings are almost satisfied by increasing prices, one of them being on a $21.50 base and the other on a $22.50 base. The latter base practically puts the quoting furnace out of the market as $20.50 can be done without much shopping. Furnacemen believe that more large inquiries are due to appear this week. The producers are again concerning themselves with differentials. While with a base of $22.50 some 2X (2.25 to 2.75 silicon) has been sold at the same figure, the interest which is quoting $21.50 has named $22 for No. 2X (2.25 to 2.75 silicon); $23 for No. 1X (2.75 to 3.25 silicon) and $24 for (3.25 to 3.75 silicon). Most of the iron sold was at a price above $20, though a heavy total was sold at $20. The selling has practically been all foundry, malleable with some high manganese. Basic, apparently has not played any important part in the selling.

Buying Still Heavy

Cleveland, Nov. 27.—Buying of pig iron has continued in large volume during the past week, and the market now reflects a stronger tendency. Sellers with good backlogs are less inclined to book for the first quarter at prevailing prices. Some are practically out of the market though not booked full for the first quarter, and others are closing only with regular buyers. On the latter basis a local furnace interest this week has sold iron at $22 furnace, for Cleveland delivery taking a 50-cent switching charge. The range on Cleveland prices is $22.50 to $23, delivered. Iron still is being sold by one of the producers represented in the northern Ohio group at $22, valley. Some Lake furnaces have increased their price 50 cents. Sales during the past week are considerably over 100,000 tons. One interest alone booked such a tonnage, bringing its total for the past two weeks close to 200,000 tons. Another company has closed for 125,000 tons; another has 100,000 tons on its books. In addition to the 50,000 tons placed by the American Radiator Co., for Buffalo, a week ago that company has closed for around 20,000 tons this week for various other plants. One large consumer has placed 9000 tons for three plants. While the consuming lines represented are well diversified a producer serving the Michigan motorcar industry says demand from that source has been relatively lighter than from others. Some large buying still remains to be done for the first quarter, and a substantial

volume of inquiry is pending, though nothing like the spectacular flood of a week or 10 days ago. A seller with 50,000 tons on inquiry before it a week ago, now has 10,000 tons. This seller has advanced its figure 50 cents, and is indifferent to new sales for the present.

Chicago Sales 250,000 Tons

Chicago, Nov. 27.—An estimate of the tonnage of pig iron sold in the present buying movement is 250,000 to 300,000 tons. Most sellers state inquiry and sales are unabated, last week's business exceeding the preceding. One seller detects a slight easing up this week and believes some of the large consumers have not been stampeded but are buying conservatively and will provide more tonnage later. Apparently most melters have placed a large portion of their needs through the first quarter. A northern Indiana automobile maker bought 7500 tons of foundry iron for the first half. A Wisconsin user purchased 5000 tons of malleable for the first quarter. A northern Illinois implement maker closed for 1500 tons of foundry iron for first quarter. Numerous sales have been closed for the first quarter including 500-ton lots of malleable and 300 to 400 tons of foundry grades. The Wisconsin Steel Co. is out of the market for foundry iron for any delivery. It has some bessemer iron available. Most sales are at $23 for spot delivery and $23.50 for the first quarter. Sellers are avoiding second quarter sales where possible. One steel interest is asking 50 cents over the foregoing levels. The southern minimum apparently is $21. Birmingham, with some furnaces withdrawn. Southern sales still are negligible. Charcoal iron is active. A Michigan melter took 1000 tons for first half. Numerous sales of 300 to 1000-ton lots have been made for outside territory. All sales are reported at $25, furnace. Some makers talk of an advance in price. A few sales of silveries in 100-ton lots have been closed at $1 less than a week ago.

St. Louis Prices Higher

St. Louis, Nov. 27.—Recent buying in pig iron has accounted for approximately 75,000 to 90,000 tons, a larger total than for the preceding four or five months. While sales have served to remove much of the feverishness from the market, there is still an excellent demand and fair tonnages have been placed during the past few days, part of which were at the advance which has followed the first burst of buying. Many smaller users have still to fill their requirements. This is evidenced by the large number of inquiries for lots ranging from 50 to 250 tons.

Virtually all the iron sold was foundry grades, steel makers having failed to enter the market. During the past week, however, some interest has been manifested by steel plants, there being two inquiries from east side melters for 5000 tons each of basic, and other smaller inquiries ranging from 1000 to 2500 tons. The general demand continues excellent, and several melters who made large purchases are increasing their orders.

All furnaces serving this district have withdrawn from the market at the prices quoted on recent business. Prices have advanced from $1 to $2.50. No. 2 southern is being offered at a range

(Continued on page 1452)

Furnaces Are Buying Coke

Some Tonnages Closed, While More Are Under Negotiation—Ovens Quoting $4.25 to $4.50—Foundry Renewals Pending—Market at $5.50

COKE PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Negotiations for first quarter beehive furnace coke are starting in earnest. A few have been closed in the past week. Producers are quoting $4.25 to $4.50 for production coke, while one or two oven operators are furnishing spot coke this month at $3.50 and $3.75. The latter prices are not quoted now, $4 being the minimum. Operators may not go below that figure unless its distress circumstances arise. The A. M. Byers Co. closed for 15,000 tons monthly for Girard plant for the first quarter at $4.40. The Robesonia Iron Co. bought 6000 tons from another source at the same price. The Eastern Steel Co. closed for a quarterly tonnage at slightly less. Among the inquiries pending are those from the Temple Furnace Co., Reading Iron Co., Shenango Furnace Co., and Replogle Steel Co., each involving 6000 to 15,000 tons monthly. These buyers are reluctant to close at $4.50, commonly quoted, and they make counter offers at the spot market figure of $4. A deadlock is on with the cokemakers. The latter claim that $4.40 does not give them a profit. The Bethlehem Steel Co. wants low phosphorus coke for its Lebanon furnace. Foundry coke customers are negotiating for renewals. The usual figure is $5.50. From $5 to $6 is openly quoted. An occasional distress lot is available at $4.75, but often that price is obtainable only on poor coke. Two brands still carry $6.50 and $7, respectively, plus 25 cents for the coke shipped in box cars.

Production of coke, according to the *Connellsville Courier* for the week ended Nov. 17 was 178,760 tons as compared with 181,920 tons the preceding week.

Eastern Prices Stronger

New York, Nov. 27.—Coke prices are tending higher. While $5 and $5.25, Connellsville, have not entirely disappeared as prices on spot standard beehive foundry fuel, the general market is $5.25 to $5.75, and in some cases producers have made sales at as high as $6.25 and $6.50. There is some inquiry for foundry coke over the first quarter and first half of next year; this has been induced not only by fears of a coal strike, but also by the fact that some foundrymen want to cover for coke along with their pig iron. The prices quoted on these forward inquiries cover a wide range. The Seaboard By-Product Coke Co. continues to quote $10.91, delivered at Newark and other northern New Jersey points for standard by-product foundry coke. This interest also has booked a considerable tonnage covering the first half requirements of its regular foundry trade.

Foundry Demand Is Larger

Cincinnati, O., Nov. 27.—Increased activity is noted in the local coke market, although large individual sales are few. Foundry coke is the bright spot, and sales in the past week were larger in the aggregate than since the week of July 10. There is a slight stiffening in prices. The bulk of foundry coke sales specify spot shipment. Eaton-Rhodes & Co., have announced the price of their Ashland, Ky., by-product coke for December shipment will be $8, Connellsville base, which is $1 under the prevailing quotation. Makers of Indianapolis and Terre Haute by-product coke have not as yet fixed their schedules for next month. A leading seller reports ry and 14 cars of Connellsville foundry the sale of 51 cars of New River foundcoke in scattered lots for first quarter. An inquiry from the United States navy department asks for 300 tons of foundry coke for Norfolk, Va. The quotation on Wise county foundry coke now ranges from $5.75 to $6.75, ovens, although some of the standard brands are bringing $7, ovens. Demand for furnace coke is dull and the same is true of domestic sizes.

Coke Stacks Are Large

St. Louis, Nov. 27.—Dullness continues to feature the coke situation in this district. The recent buying movement in pig iron is not reflected in an increased demand for furnace coke, and the domestic trade is the slowest for this season in years. Accumulations in the storage yards of the by-product plants are growing to formidable size. Dealers are well stocked. There has been no change worthy of note in quoted prices. Some coke is arriving from the Connellsville district, but most melters in this district are being supplied from the by-product ovens here. Unofficial figures as of Nov. 20 estimate stocks at by-product plants as follows: Granite City, Ill., 60,000 to 70,000 tons; Chicago, 200,000 tons; St. Paul, 70,000 tons; Indianapolis, 60,000 to 80,000 tons; Terre Haute, Ind., 50,000 to 60,000 tons; Ashland, Ky., 60,000 to 80,000 tons and St. Louis, 30,000 tons.

Expect Stronger Prices

Birmingham, Ala., Nov. 26.—By-product foundry coke is quoted here at $5 to $7. Beehive cokemakers are finding some sale for their 72-hour product and are getting the highest price. Some advance in price is looked for in the next week or two. The Sloss-Sheffield Steel & Iron Co. has very little coke on its yards. The Woodward Iron Co. is repairing some of its by-product ovens, and its three blast furnaces require a large quantity of coke. The Tennessee Coal, Iron & Railroad Co. has nine blast furnaces in operation and foundries which require considerable coke, but the company's coke surplus is large.

Republic Adds Mills

Youngstown, O., Nov. 27.—Extensive improvements are being made at the bessemer plant of the Republic Iron & Steel Co., including the replacement of a billet and sheet bar mill with more modern electrically driven machinery and the building of a mixer. Production of the bessemer department will be increased and costs lowered by the improvements.

Pig Iron Sales Higher

(Continued from page 1451)

of $19.50 to $21, while the lowest heard on Chicago iron is $23 for spot and $23.50 for next year. The leading local producer has advanced to $26 to $27, f.o.b. Granite City.

South Selling Iron Well

Birmingham, Ala., Nov. 28.—Pig iron selling continues active. Quotations are firmer at $20 to $21 for No. 2 foundry, while some smaller producers are asking $21 and $22. Recent sales were large and distribution is spread over three months or more. The Sloss-Sheffield iron pipe makers, radiator works and stove makers, have been buying in anticipation of activity through first half.

Prices Firming Up

Cincinnati, Nov. 27.—An advance in the southern pig iron price from $19.50 to $21; withdrawal from the market of several furnace interests in the South and southern Ohio district, and a large volume of sales are outstanding features this wek. Inquiries now are far below the volume in the fore part of last week, during which the buying movement reached its peak. The position of the furnaces is much stronger. Shipments exceed production for the first time this year in the southern Ohio district. The reports the sale of 300 tons of 8 per cent silvery iron at the lower price to a northern Ohio melter. Sales in the Cincinnati territory involve about 150,000 tons of iron. Inquiries are pending for about 15,000 tons. The Link-Belt Co., is in the market for 3000 tons of northern iron for Indianapolis. The American Foundry Co., Indianapolis, wants 500 to 1000 tons of northern and the New Idea Spreader Co., Coldwater, O., desires 500 tons of the same grade.

Largest Week for Long Time

Philadelphia, Nov. 27.—Pig iron business during the past week was the largest for any similar period in a long time. Furnaces are well booked

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Nov. 28, 1923	Oct. 1923	Aug. 1923	Nov. 1922
PIG IRON				
Bessemer, valley del., Pitts....	$24.77	27.27	28.07	33.77
Basic, valley	20.00	23.75	25.00	28.00
Basic, eastern del., eastern Pa..	22.75	24.00	25.10	28.00
*No. 2 foundry, del. Pitts.....	23.77	25.17	26.47	30.17
*No. 2 foundry, Chicago.....	23.00	25.60	27.10	30.60
*Southern No. 2, Birmingham...	19.00	20.20	23.60	24.00
*Southern Ohio, No. 2, Ironton.	22.00	23.90	26.00	29.75
**No. 2X, Virginia furnace.....	25.50	25.00	26.25	31.40
**No. 2X, eastern del., Phila..	23.76	24.51	25.81	30.50
Malleable, valley	19.00	23.25	24.70	29.60
Malleable, Chicago	23.00	25.60	27.10	30.60
Lake Superior charcoal, Chicago..	28.04	30.05	32.10	36.15
Gray forge, val. del. Pittsburgh	23.27	24.52	26.27	29.77
Ferromanganese, del., Pitts.....	113.79	112.79	122.29	104.92
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh.	42.50	42.50	42.50	38.80
Sheet bars, open-hearth, Pitts....	42.50	42.50	42.50	38.80
Billets, bessemer, Pittsburgh....	41.50	41.50	42.50	38.80
Billets, open-hearth, Pittsburgh..	41.50	41.50	42.50	38.80
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.40	2.40	2.40	2.00
Steel bars, Chicago	2.50	2.50	2.50	2.00
Steel bars, Philadelphia	2.72	2.72	2.72	2.325

	Nov. 28, 1923	Oct. 1923	Aug. 1923	Nov. 1922
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia	$2.62	2.62	2.72	2.325
Iron bars, Chicago mills.....	2.40	2.38	2.48	2.50
Beams, Pittsburgh.....	2.50	2.50	2.50	2.00
Beams, Philadelphia	2.72	2.72	2.82	2.325
Beams, Chicago.....	2.60	2.60	2.60	2.10
Tank plates, Pittsburgh.....	2.50	2.50	2.50	2.00
Tank plates, Philadelphia.....	2.72	2.72	2.82	2.325
Tank plates, Chicago	2.60	2.60	2.60	2.10
Sheets, blk., No. 28, Pittsburgh.	3.75	3.75	3.85	3.35
Sheets, blue anl., No. 10, Pitts.	3.00	3.00	3.00	2.60
Sheets, galv., No. 28, Pittsburgh.	4.85	5.00	5.00	4.35
Wire nails, Pittsburgh.....	3.00	3.00	3.00	2.70
COKE				
Connellsville furnace.....	4.00	3.85	4.45	7.10
Connellsville foundry, ovens.....	5.00	4.80	5.20	8.40
OLD MATERIAL				
Heavy melting steel, Pittsburgh.	16.00	16.10	17.50	20.40
Heavy melting steel, eastern Pa.	16.00	15.50	16.00	16.70
Heavy melting steel, Chicago ..	14.50	14.50	16.25	17.40
No. 1 wrought, eastern Pa....	17.75	18.00	17.50	21.20
No. 1 wrought, Chicago	16.00	15.30	17.05	18.10
Rails for rolling, Chicago	16.00	16.25	17.75	18.90

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Nov. 28, 1923	Nov. 21, 1923	October, 1923	August, 1923	November, 1922	November, 1913
$42.80	$42.63	$43.84	$44.87	$42.08	$24.02

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Steel & Iron Co. has blown in one of its city stacks and another probably will be blown in by January. The Alabama Co., will hurry repairs on its Gadsden furnace which will be blown out this week, planning to resume by Jan. 1. Most business booked during the past two weeks was sold under $20 per ton. Distribution has been wide, the Middle West taking a large tonnage. Local melters have covered needs for some time. Spot business in small lots has continued. Many consumers are still buying from one to three or five carloads at a time. In the past week several lots of 5000 tons were booked and lots of 500 to 750 tons were common, the larger inquiries being for the purpose of obtaining a concession. Nearly half of current moderation is basic, which does not go into the open market. Larger melters, including cast

southern Ohio market is firm at $22 to $22.50, Ironton base. The ruling quotations on southern iron is $21, Birmingham base. Silveries are down $1. The past week saw the sale of 9000 tons of southern iron to the Standard Sanitary Mfg. Co., for its Louisville, Ky., plant. This tonnage for first quarter delivery was divided between three southern furnace interests. The Williamson Heater Co., Cincinnati, bought 4000 tons of northern iron for first quarter shipment, while the American Radiator Co., closed for 3000 tons of Buffalo iron for its Springfield, O., plant. It is reported that the Muncie Foundry & Machine Co., Muncie, Ind., purchased a sizable tonnage of northern iron from a local seller. A sale of 1000 tons of charcoal to a Michigan user also is noted. A leading seller

ahead and prices have been advanced. Most makers now are at $23, base furnace, plus 50 cent silicon differentials, one quoting $23.50, base. These figures are largely nominal due to the fact that not much business has developed since they were quoted. As a matter of fact, most business in the recent large buying wave went at $20.75 to $22, base furnace. As a result of the heavy buying, several furnaces which were slated to blow out will continue operating. These include Chester, Hokendauqua and Lochiel. At least 2500 tons of low phosphorus was sold, most of which was copper bearing at $28, furnace, while some copper free was sold higher than $32, Philadelphia. Basic is nominal at $22, eastern furnace, Virginia foundry iron is firm at $25, base

Iron and Steel Prices

SCRAP PRICES, PAGE 1512, WAREHOUSE PAGE 1504, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1508

Pig Iron

Prices per gross ton

Bessemer, valley	$23.00
Bessemer, Pittsburgh	24.77
Basic, valley	20.00 to 21.00
Basic, Pittsburgh	21.77 to 22.77
Basic, Buffalo	20.50
Basic, del., eastern Pa.	22.75
Malleable, valley	19.00 to 20.00
Malleable, Pittsburgh	21.77 to 22.77
Malleable, Chicago	23.00 to 23.50
Malleable, Buffalo	20.50 to 21.50
Malleable, del., eastern Pa.	24.00 to 24.50

FOUNDRY IRON SILICONS

No. 2 Northern	**1.75 to 2.25**
No. 2 Southern foundry.	**1.75 to 2.25**
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	24.26 to 25.26
No. 1X, Buffalo	21.00 to 23.00
No. 2 foundry, valley	22.00
No. 2 foundry, Pittsburgh	23.77
No. 2 foundry, Buffalo	20.00 to 21.50
No. 2 foundry, Chicago	23.00 to 23.50
No. 2 foundry, Granite City	26.00 to 27.00
No. 2 foundry, Ironton furnace	22.00 to 22.50
No. 2 foundry, Cleveland, del.	22.50 to 23.00
No. 2 foundry, del., Phila.	23.26 to 24.26
No. 2 foundry, N. J., tidewater	23.76 to 24.76
No. 2X, eastern del., Phila.	23.64 to 24.13
No. 2X, east. N. J., tidewater	24.14 to 24.63
No. 2X, eastern del., Boston	25.65 to 26.65
No. 2X foundry, Buffalo fur.	20.50 to 22.00
No. 2X, Buffalo, del. Boston	25.92 to 26.92
No. 2 southern, Birmingham	20.00 to 21.00
No. 2 southern, Cincinnati	24.05 to 25.05
No. 2 southern, Chicago	26.01 to 27.01
No. 2 southern, Philadelphia	27.80 to 28.80
No. 2 southern, Cleveland	26.01 to 27.01
No. 2 southern, Boston (rail and water)	26.91 to 27.91
No. 2 southern, St. Louis	25.17 to 26.17
No. 2X, Virginia furnace	25.50
No. 2X, Virginia, Phila.	30.77
No. 2X, Virginia, Jersey City	31.04
No. 2X, Virginai, Boston	31.92
Gray forge, eastern Pa.	22.50 to 23.00
Gray forge, val. del., Pitts.	23.27
Low phos., standard, valley	29.50
Low phos., standard, Phila.	30.00
Low phos., Lebanon, furnace	28.00
†Low phos. English, delivered Phila. territory	29.26 to 30.64
Charcoal, Birmingham	32.00 to 33.00
Charcoal, Superior, Chicago	28.04

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	30.00
8 to 9 per cent	31.50
9 to 10 per cent	33.50
10 to 11 per cent	35.50
11 to 12 per cent	38.00
12 per cent	40.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	40.50
11 to 12 per cent	43.00
12 to 13 per cent	45.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$109.00 to 110.00
Ferromanganese, delivered, Pittsburgh	113.79 to 114.79
Spiegeleisen 19 to 21 per cent furnace or tidewater	38.00 to 40.00
Ferrosilicon, 50 per cent contract freight allowed	75.00 to 79.00
Ferrotungsten standard, per pound contained	85.00 to 90.00
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon per pound contained, delivered	12.00
Imported ferrochrome, 4 to 6 per cent carbon	nominal
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	5.00 to 6.00
New River foundry	11.00 to 12.00
Wise county furnace	5.25 to 5.75
Wise county foundry	5.75 to 6.75
Alabama furnace	5.00 to 6.00
Alabama foundry	6.00 to 7.00

By-Product

Foundry, Newark, N. J., del.	$10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	13.00 to 13.50
Foundry, Granite City, Ill.	13.00 to 13.50
Foundry, Alabama	5.00 to 6.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$40.00 to 42.50
Open-hearth, Youngstown	40.00 to 42.50
Open-hearth, Philadelphia	45.17 to 47.67
Bessemer, Pittsburgh	40.00 to 42.50
Bessemer, Youngstown	40.00 to 42.50
Forging, Pittsburgh	45.00
Forging, Philadelphia	50.17 to 52.67

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	$40.00 to 42.50
Youngstown	40.00 to 42.50

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh	$51.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; **$10 over 0.75.**

SKELP

Grooved skelp, Pittsburgh	2.40c
Universal skelp, Pittsburgh	2.40c
Sheared skelp, Pittsburgh	2.40c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.50c
Structural shapes, Phila.	2.67c to 2.82c
Structural shapes, New York	2.69c to 2.84c
Structural shapes, Chicago	2.60c
Tank plates, Pittsburgh	2.50c
Tank plates, Philadelphia	2.72c to 2.82c
Tank plates, New York	2.74c to 2.84c
Tank plates, Chicago	2.60c
Bars, soft steel, Pittsburgh	2.40c
Bars, soft steel, Philadelphia	2.67c to 2.72c
Bars, soft steel, New York	2.69c to 2.74c
Bars, soft steel, Chicago	2.50c
Bars, refined iron, Pittsburgh	3.25c to 5.00c
Bars, rail steel, Chicago	2.30c
Bars, rail steel, mill	2.10c to 2.25c
Reinforcing bars, billet, Pitts.	2.40c
Bar iron, common, Phila.	2.57c to 2.67c
Bar iron, common, New York	2.59c to 2.69c
Bar iron, common, Chicago	2.40c
Bars, forging quality, Pitts.	2.65c

Hoops, Bands, Shafting

Prices per pound

Hoops, Pittsburgh, under 5 in.	3.00c to 3.15c
Hoops, Pittsburgh, 20 gage, under 1 in.	3.25c to 3.30c
Bands, Pittsburgh	2.90c to 3.15c
Cold finished steel bars, Pittsburgh base	3.00c
Steel shafting, Pittsburgh	3.00c
Cotton ties, bundle 45 lb. Pittsburgh	$1.65

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.25c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.15c
Spikes, small railroad, Pitts.	3.50c
Spikes, boat and barge, Pitts.	3.50c
Spikes, railroad, Chicago	3.25c
Track bolts, Pitts. Standard.	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.25c
Tie plates, Pittsburgh	2.60c
Tie plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	3.00c
Galv'd nails, 1-inch and over	5.25c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples, Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.70c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.50c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	3.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	5.00c

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	4.07c to 4.17c
No. 28, open-hearth, Chicago.	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.85c

GALVANIZED

No. 28, open-hearth, Pitts.	4.90c to 5.00c
No. 28, bessemer, Pittsburgh	4.90c to 5.00c
No. 28, open-hearth, Phila.	5.17c to 5.32c
No. 28, open-hearth, Chicago.	5.19c to 5.34c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.00c
No. 10, bessemer, Pittsburgh.	3.00c
No. 10, open-hearth, Phila.	3.32c
No. 10, open-hearth, Chicago.	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.35c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$59.20 to 60.20
Six-inch and over, Chicago	55.20 to 56.20
Three-inch, Birmingham	59.00 to 60.00
Four-inch, Birmingham	53.00 to 54.00
Six-inch and over, Birmingham	49.00 to 50.00
Four-inch, New York	67.60
Six-inch and over, New York	62.60

Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Little Movement in Scrap

Varied Currents Noted in Market as Prices Hold Nearly Same Level—Users Thought Near Placing Large Tonnages

SCRAP PRICES, PAGE 1512

Chicago, Nov. 27.—Iron and steel scrap prices are reacting to the present condition of inadequate supply to meet the demand, and increases of 50 cents to $1.50 a ton on practically all grades are the rule. While much unprepared steel scrap is on dealers yards, there is a paucity of melting steel for immediate delivery. Spotty buying prevails in practically all grades. Railroads have cut down their car-wrecking programs, which has contributed to the dearth of material. Present advances are based on actual demand as well as on sentiment. Heavy melting steel is quoted at $14.50 to $15 per ton. Railroad lists include 7400 tons by the Burlington; 1000 tons by the Chicago & Alton; 450 tons by the Monon and 250 tons by the Wabash.

Steel Moves Slowly

Boston, Nov. 27.—The New England iron and steel scrap market is spotty. Some grades have advanced and others have dropped. Some grades are active and others dull. Generally, sentiment shows improvent. Cast grades are moving in moderate volume. Steel mill grades are sluggish despite cheerful reports from Pennsylvania. Sales totaling 10,000 tons are reported for shipment to Pittsburgh at $17 at the mill, but the call to fill this order has not yet reached New England. A few small lots of heavy steel have been placed at $11. Several cars of chemical borings have sold at $10. Sales of stove plate have been negligible and the chief consumer in this district is waiting for lower prices. The Boston Elevated is offering several hundred tons of car wheels, 400 tons of girder rails, and other miscellaneous material.

Price Trends Upward

New York, Nov. 27.—The iron and steel scrap market again shows an upward tendency, dealers marking up buying prices on a number of grades. These advances for the most part amount to 50 cents in such grades as heavy and No. 1 railroad steel, wrought material, borings, and turnings, shafting axles, and cast scrap. Pipe is up $1. While trading is slightly better, the growing strength of the market is based chiefly on sentiment. It is essentially a case of dealers looking for a more active steel market and for that reason are inclined to hold out for higher prices, and also pay more for stocks laying around. The improvement in pig iron is a strengthening factor, its influence is noted particularly in cast scrap. While it is still hard for delaers to sell this material, they believe the upward tendency in pig iron will soon have a stimulating effect on buying, and are willing to pay more in an effort to have a sufficient supply on hand. Eastern mills are paying slightly more for steel, most leading consumers now paying $15, delivered, an increase of 25 cents in most cases. Wrought pipe is going to Milton, Pa., at $16, delivered. Little buying by Pittsburgh district consumers is noted in this market.

Users Want to Buy

Pittsburgh, Nov. 27.—Several steel mill scrap consumers in the Pittsburgh territory are known to be anxious to buy scrap in quantities at today's quoted prices. Several are asking for 5000 to 10,000 tons each of various grades, steel specialties, shovel turnings and cast iron borings, but such quantities are not available to sell at present levels and mills refuse to increase their bids. In some cases dealers continue willing to pay more than mills are offering. The Pressed Steel Car Co. bought some iron car wheels at $18, and the quotation is raised 50 cents to a range of $17 to $17.50, which dealers are paying. One nearby buyer is seeking 5000 tons of cast iron borings or shovel turnings and might pay $14. Dealers' prices are quoted at $13 to $13.50 on turnings and $13.50 to $14 on borings. A few other grades are up 50 cents and compressed sheets are up 25 cents. The Westinghouse Electric & Mfg. Co.'s list this month bought $14.75 f.o.b. its plant. Large railroad offerings are in sight for this week and the Pennsylvania railroad's four lists are expected to compare in size with last month's, aggregating in the neighborhood of 50,000 tons of assorted scrap which probably will again be absorbed by dealers. Heavy melting steel continues unchanged at $16 to $16.50. The Pennsylvania railroad, eastern region, offers 26,000 tons, Dec. 5.

Buy Supplies Lightly

Buffalo, Nov. 27.—Mills have offered to buy heavy melting steel at $14.50 to $15, but they do not care to stock heavily. Some small lots have been sold for delivery this year at $14.50. The better feeling noticeable late last week has brought no further favorable developments. Dealers' idea of price on heavy melting steel is about $16 since about all the stocks they now hold after preparation, have cost them sufficient to make this a fair selling price. Steel castings plants are curtailing operations, lessening the market for No. 1 cast, and one blast furnace interest which was interested in borings and turnings has discontinued their use in its mixture.

Some Strength at Detroit

Detroit, Nov. 29.—Some strength is noted in the scrap market, but it is due more to trade between dealers than from consumers. Inquiry by dealers among mills fails to elicit response for material. Prices are up 50 cents over a week ago on most blast furnace stock, while foundry scrap is unchanged. A local blast furnace took some tonnage a week ago and since then has been out of the market. Dealers do not expect demand from consumers for the remainder of this year. Yard men are taking liberal quantities of sheet clippings, turnings and borings. Most of this is going into storage and buying prices range from $1 to $1.50 under the general dealer's buying quotations.

Much Small Buying

Philadelphia, Nov. 27.—Iron and steel scrap dealings are small, though considerable buying is expected shortly. Buyers and dealers are deadlocked on price, the former asking $17 to $17.50, delivered, for steel scrap, while mills are offering only $15.50 to $16.

St. Louis Scrap Higher

St. Louis, Nov. 27.—The recent movement in pig iron has been given quite a fillup to the market for scrap iron and steel. There is a better feeling than in several months, and prices have moved upward 50 cents to $1.75. Consumers, while still buying on a hand-to-mouth basis, are displaying more interest. Mills are inquiring quietly and real buying would doubtless begin save for the fact that melters and dealers are still wide apart on prices. Most users are low on scrap supplies, the average for all melters being about 30 days' supply. Everything railroads put out is readily taken by dealers, and a large part of the railroad tonnage is being stored in yards. Dealers are firm in their ideas of prices, and some substantial orders have been turned down at current quotations.

Foundry grades are distinctly better. Steel specialties are scarce and higher. Rolling mill grades continue relatively quiet. The leading consumer of rails for rerolling has purchased a round tonnage, reported at between 4000 and 5000 tons. Virtually all users are urging shipments on tonnages under contract. Railroad offerings included 7000 tons by the Chicago, Burlington & Quincy, and 300 tons of No. 1 wrought by the Wabash.

Southern Market Lifeless

Birmingham, Nov. 27.—Iron and steel scrap has suffered severely from recent reductions in pig iron and melters are buying less. Old steel rails are in some demand by rolling mills. Quotations still are weak and tend downward. With pig iron low cast scrap is not in demand. Some scrap is moving on old orders and sales of carloads are being made. Cast pipemakers are still using some scrap but not as much as formerly. Chemical borings have declined $1 to $2 per ton and the market is slow. Heavy melting steel is lifeless though the Gulf States Steel Co. is operating four open hearths steadily.

Dealers Make Market

Cincinnati, Nov. 27.—Iron and steel scrap prices are firmer, most grades being advanced 50 cents a ton. This has resulted largely from dealer and not consumer activity as the market continues largely in dealers' hands. On the other hand dealers say they have marked up their prices in sympathy with advanced quotations in other markets. Mills apparently are going into the year with as low scrap inventories as they ever have had.

The Transue & Williams Steel Forging Corp., Alliance, O., reports net sales

of $445,711 for October and $5,249,821 for the 10 months ended Oct. 30, 1923. Net profits for the first 10 months of 1923.

Improved Activity

Shown In Ferromanganese and Prices Are Advanced—Other Alloys Quiet

FERROALLOY PRICES PAGE 1453

Pittsburgh, Nov. 27.—Pronounced ferromanganese activity for 10 days past has reflected somewhat the condition prevailing in pig iron and of itself represents the feature of the ferroalloys market this week. Some users who stated that they would not be in the market until some time early next year have closed tonnages for shipment in December, indicative of the fact that their stocks were lower than they realized. Others have placed contracts for December and for the first quarter. Tonnages placed involve from single carloads up to around 750 tons and American producers each have taken up to 3500 tons in the past few days. After having gone slightly under the $107.50 Baltimore base figure, additional orders were taken at $107.50 Baltimore base and now an advance effective immediately to $109 has been inaugurated following the increase of the importers of English material early last week which took their price to $110, base. Inquiries pending involve from single carloads up to 500 tons including one from Colorado Fuel & Iron Co. As yet spiegeleisen buyers are not coming into the market actively. One sale of 200 tons of 19 to 21 per cent is noted at $40 furnace, and a few carloads went as low as $38, furnace.

Other alloys are quiet, although 50 per cent ferrosilicon users are commencing to line up contracts for a part of next year. One large interest closed on 200 tons a month for the first half at $75, freight allowed. From $75 to $79 now is the quotable market since one or two small orders have been closed at $79, freight allowed. Several inquiries now are pending for 50 or 75 per cent material.

Ferro Sales At $110

New York, Nov. 27.—Interest in ferromanganese has improved. At least 500 tons have been sold in small lots during the past week. These went at first hand, at $110, duty paid tidewater. Inquiries now before the trade call for more than 1000 tons.

Inquiries have appeared which involve more than 1000 tons of spiegeleisen but the major portion is from consumers who might buy either ferromanganese or spiegeleisen. Sales of spiegeleisen in the past week involved only a few carloads. The market is $38 to $40, furnace, for 20 per cent metal.

Quotations for the special ferroalloys and ores are unchanged. New business is light, consumers taking as little as possible at present in view of the approaching inventory season

Domestic Ferro Now $109

Philadelphia, Nov. 27.—Domestic ferromanganese now is quoted $109 duty paid tidewater or $1 under the English price. English producers are to hold a conference this week to discuss the price situation. Total sales of ferromanganese the past week were at least 3000 tons and current inquiry represents about 2000 tons.

Semifinished Sales Small

Some Tonnage of Sheet Bar, Billets ana Slabs Booked at $42.50 for December—Most Buyers Weiting for Lower Levels

SEMIFINISHED STEEL PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Forward interest in semifinished steel, while it has not died out entirely, refuses to be stimulated. Numerous users are expected to enter the market, and makers are holding firmly to the $42.50 level, either Pittsburgh or Youngstown. Several conversion mills are quietly seeking to develop a lower figure, offering $40 or less. Recent activity in pig iron at low prices has made them think that correspondingly low figures should now be quoted on semifinished material. Some large interests were endeavoring early last week at a seller's solicitation to arrange a trade deal whereby sheet bars would be furnished, but because on Wednesday it was impossible for that seller to duplicate Monday's pig iron prices, the deal fell through.

A Canonsburg, Pa., mill is in the market with a bona fide sheet bar inquiry but so far has not developed any levels lower than $42.50. Numerous conversion plants figure they still have time to place orders for first quarter between now and the end of the year and will defer action as long as possible in the hope that a lower quotation will be forthcoming. The American Sheet & Tin Plate Co. is piling all the open-hearth sheet and tin bars it can although so far has made no entry into the open market.

Slabs and billets are available at slightly under the $42.50 level and some mills doubtless will sell at $40. Wire rods are unchanged at $51 base, the only inquiries current being those of the cold drawn steel bar finishers. While some buyers believe that skelp can be had at 2.35c, the regular market is 2.40c, base Pittsburgh, in the absence of any activity.

Billets Sold in East

Philadelphia, Nov. 27.—About 1000 tons of billets have been sold this week, mainly for the first quarter. The minimum price continues to be $40, base Pittsburgh, for rerolling billets, and $47 for forging quality.

New Orders Still Lacking

Youngstown, O., Nov. 27.—Buying of semifinished material continues to be lacking outside of a few sales of sheet bars involving insignificant tonnages, for spot shipment. The semifinished market during the past six weeks has lacked broadness. A week ago an order for about 300 tons of open-hearth sheet was placed at $42.50, Pittsburgh, freight charges being equalized. The only sales reported this week involved about 250 tons of sheet bars for immediate shipment and were entered at $42.50, Youngstown.

Orders Booked at $42.50

Cleveland, Nov. 27.—Some signs of life are appearing in the market for semifinished material. Several inquiries that came out in the past week have developed into orders, and more business seems in prospect. The leading maker in this district booked sheet bars, billets and slabs at $42.50, Youngstown, on the new business that was offered for December shipment. Several thousand tons in the aggregate, of the three grades have been placed.

Buying More Wire

Jobbers in Good Position While Sales Increase, Especially Mixed Lots

WIRE PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Buying of mixed carloads of wire products showed some life the past week and jobbers in various sections are beginning to buy. By the middle or end of next month this sort of buying will represent a heavy aggregate and jobbers everywhere will be placing orders to replenish stocks, in which they have been hampered by the wish to avoid large inventory. Several nail mills and wire plants in this locality have fair backlogs and are going ahead on a 70 per cent basis. Wire is unchanged at 2.75c and nails at 3.00c, base Pittsburgh.

Eastern Inquiry Heavy

Boston, Nov. 27.—New England consumers of wire are busy and specifications in the hands of wire makers are extensive. Current sales hold up well, but heavy buying is not expected until after the first of the year. Prices are unchanged.

Wire Demand is Good

New York, Nov. 27.—Wire and nail production now is about 73 to 74 per cent, and operation at some of the smaller plants is higher. New business is nearly equal to production and representative makers report difficulty in building up stocks in some lines of wire. Prices continue firm at 2.75c, base Pittsburgh, for wire and 3.00c base Pittsburgh, for nails.

Still Thirty Days Ahead

Chicago, Nov. 27.—Jobbers' stocks of wire and wire products continue about 30 days ahead of needs and they are not increasing their orders to mills. The outlook for 1924 constantly is improving. Prices are holding firm in all classifications.

Leaders Express Confidence

Conservative optimism marks the business forecasts prepared by more than a score of industrial leaders of the United States and published in a booklet issued by P. F. McDonald & Co., Boston, Mass., dealers in special steels. The company has collected statements on the outlook from E. H. Gary, chairman of the United States Steel Corp., Charles M. Schwab, chairman of the Bethlehem Steel Corp.; E. M. Herr, president of the Westinghouse Electric & Mfg. Co., George M. Verity, president of the American Rolling Mill Co.; Alexander Legge, president of the International Harvester Co. and other important executives. All those quoted express belief in the fundamental soundness of business conditions.

Bar Movement Is Larger

Better Specifications and Probable Buying for Delivery After Inventory Give Air of Improvement—Prices Hold Former Level

BAR PRICES, PAGE 1453

Chicago, Nov. 27.—Makers of soft steel bars find specifications slightly heavier, a condition which all classes of consumers are assisting. New business continues slow and in this respect the bar situation is only fair. Toward bars, as well as other finished steel products, the price outlook of the buyer is improving, and the soft steel bar price is firm at 2.50c, Chicago.

Just enough business is filtering into bar iron mills to keep them operating one turn. Producers are holding at 2.40c, Chicago, believing a reduction would not stimulate business. Much the same condition obtains in rail steel bars, where 2.30c, mill, continues to be asked. Some implement makers have reduced their purchases.

Bar Sales Increase

Boston, Nov. 27.—Sales of bars in New England showed a decided improvement during the past week. Paper machine manufacturers and automobile parts manufacturers were the chief buyers. Several concerns have placed orders covering the next two or three months' requirements. The price generally is firm at 2.40c, although here and there a small order is reported placed at 2.35c.

Fill First Quarter Bars

Youngstown O., Nov. 27.—Books were opened by some producers this week for first quarter tonnage of soft steel bars, 2.40c, Pittsburgh, being quoted on all business. Approximately 6000 tons were entered by one producer at this figure.

Activity Is Disappointing

Pittsburgh, Nov. 27.—Merchant steel bar buying is disappointing and specifications on live contracts are meager. Steel makers say nothing about a bar price for first quarter but indicate it will not change from 2.40c, the level now representing the open market. Tonnage buyers, such as the cold drawn steel bar finishers, are endeavoring by every means possible to bring about a lower quotation, saying they cannot afford to pay 2.40c, plus the extras, when their own selling price on the converted bar will not give them above 3.00c at present. Most orders for merchant steel bars are for less than carloads although single carload orders are fairly frequent.

Refined iron bars show an improved movement and it has been possible for some makers here to increase operations. For instance, Brown & Co., Inc., went on double turn yesterday. Prices are unchanged at 3.25c, base Pittsburgh.

Big Tonnages Are Sought

Cleveland, Nov. 27.—Automotive business looms up in a large way before the steel bar market but not much tonnage comparatively yet has been closed. The leading negotiation involves 15,000 to 20,000 tons of various bar products for an accessory manufacturer in this district, deliveries to be made over the first half. The Ford Motor Co. has been a recent buyer of about 10,000 tons of bar products from different mills to piece out its requirements for this year but it has not bought for its 1924 needs, expecting to negotiate these soon. Other automotive business is in sight. A railway specialty manufacturer in northern Ohio in the week placed 2000 tons of bars with a producer in the Pittsburgh district. Reports that a large tonnage of bars has been bought by Cleveland nut and bolt makers from Buffalo mills at a low price cannot be substantiated. Local nut and bolt interests have bought no tonnages recently of size. Several of them still have tonnage on mill books placed some months ago, which is at a very low price compared with today's market. Hence, there is small incentive for their placing additional tonnage. Generally the outlook for bar business is better. Present sales are held to small amounts and buyers at this season are not disposed to contract for the future. All the larger mills are maintaining 2.40c, Pittsburgh. Some of the smaller producers, however, will shade this figure now and then where the business is attractive. This cutting usually amounts to $1 to $2 a ton.

Shading Not Verified

Buffalo, Nov. 27.—Reports of a shaded 2.40c on bars are not verified, and local mills are firm. Some buying in December is expected for the first quarter.

Prices Are Firmer

Philadelphia, Nov. 27.—Steel bar prices are firmer, with 2.40c Pittsburgh, equivalent to 2.72c, Philadelphia, being maintained by all important makers. Current business includes only immediate requirements and does not equal production.

Cold Drawn Buying Starts

Pittsburgh, Nov. 27.—Since numerous automotive interests have outlined their programs for first quarter, a number have been active during the past few days placing cold-drawn steel bar business. These orders vary according to the size of the consumer and the extent to which they are protecting themselves. Orders from a single carload to several hundred tons at a time have been placed and possibly one or two 1000-ton lots as well. One or two such large desirable bookings have commanded a more attractive figure than the going market of 3.00c, base Pittsburgh, but so far nothing less than 2.90c has appeared, notwithstanding pressure to develop an even lower price. Several lots still are pending with that end in view. By some finishers it is expected this interest will die out in a week or two and a few are keen for backlogs. Some however, are not inclined to offer much in the way of concessions since their conversion costs are high, particularly when the market on merchant steel bars shows no signs of declining from 2.40c, base Pittsburgh, and wire rods cannot be had at less than $51, base Pittsburgh.

Small Demand for Nuts, Bolts, Rivets

NUT AND BOLT PRICES, PAGE 1508

Pittsburgh, Nov. 27.—While a few small sales of nuts, bolts and rivets are made each week for current needs of users or jobbers, large buying is withheld. The possible cause is uncertainty of prices although stocks are being kept low for inventory purposes. Producers have not been informed what their raw material costs will be for first quarter and are not aggressively seeking contracts for future shipment as they are not in a position to quote intelligently. Competition is keen although discounts are unchanged on the basis of 60 and 5 off for large machine bolts. Rivets which were down to a 2.60c, base Pittsburgh, minimum cannot now be quoted at less than 2.70c or 2.75c, makers being unwilling to duplicate the previous low figure. Smaller rivets are quoted at 65 and 10 off down to 70 off. A fair operating average for nut, bolt and rivet plants would be around 65 per cent of capacity.

Specifications Not Good

Chicago, Nov. 27.—Bolt and nut makers find themselves able to maintain about 50 per cent operations. In the past week specifications have been slightly lower. Some smaller warehouses are understood to have shaded prices almost to the mill level.

Better Inquiry at Cleveland

Cleveland, Nov. 27.—Stronger inquiry and larger specifications are reported by local bolt and nut producers. As a result prices are firmer than they have been in some time and there is less tendency to shade quotations. Most of the current inquiry is coming from the railroads, several roads within the past few days issuing requests for exceptionally large tonnages.

Rivet demand is so small the market is scarcely tested. On the small business being placed little difficulty is met in obtaining 2.90c to 3.00c, base, Pittsburgh. However, on a large order doubtless as low as 2.75c, Pittsburgh, can be done.

Rivet Price Is Maintained

Philadelphia, Nov. 27.—While 2.65c, Pittsburgh, has been done elsewhere on rivets, the most attractive business in this district has been unable to cover a lower price than 2.75c, Pittsburgh.

Buy Hoops Lightly

HOOP PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Buying for future shipment in hoops and bands is withheld and the impression prevails that buyers will fill their needs in the spot market from month to month. Some small contracts will doubtless be placed but producers generally are not soliciting them. Operations do not exceed 65 per cent of capacity. Narrow and light hoops are quoted at from 3.25c up with regular hoops and

bands at 3.00c to 3.15c, base Pittsburgh. Shading of 3.00c on wide bands is disappearing. In the case of a few large makers, backlogs have been collected for shipment after inventory time or after Jan. 1.

Much Tin Plate

Selling Has Loaded Mills With Heavy Backlogs for Full First Half

TIN PLATE PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Shipments of tin plate are being made at a high rate, commensurate with the present operating basis which is over 90 per cent of capacity. Little material is being piled since transportation service is good and users want all the material they can get. Producers are trying to ship out everything possible this year to manufacturers of food and other containers. The American Sheet & Tin Plate Co.'s average operations again were high this past week, 93.7 per cent, compared with 93.9 per cent the preceding week. Additional orders are being presented, but cannot be acepted except for delivery next year. Pleasing specifications arrive daily and several large producers are protected with all the tonnage they need for three to six months. The price continues unchanged at $5 50 per base box of 100 pounds, Pittsburgh.

First Half Tin Sold

New York, Nov. 27.—Practically all first half tin plate production has been sold. The American Sheet & Tin plate Co., as a result of the recent heavy forward buying, now has sold its entire first half output and has on its books for that delivery over 10 000,000 boxes of tin plate, or between 500,000 and 525,000 tons. The bulk of this business came from can makers.

Load Last Cargo of Ore from Superior

Duluth, Minn., Nov. 27.—The last cargo of iron ore for the season is loading at the Great Northern railroad's docks at Superior today. Advance figures place the season's shipments from the Lake Superior district at nearly 59,000,000 tons. The Great Northern docks set a new shipping record with about 15,735,000 tons.

Winter underground mining and stripping on the ranges is active. The number of miners employed is estimated at 17,000, including 11,000 by the Oliver Iron Mining Co.

Will Build Ovens

The Utica Gas & Electric Co. has just contracted with the Koppers Co. for a by-product recovery plant and liquid purification plant to be built at Utica, N. Y. Several weeks ago the Utica company contracted with the Koppers company for a coal gas plant of 21 gas ovens, and the by-product plant is to be designed to recover tar and ammonium sulphate from the gas produced in these ovens. The liquid purification plant will have a capacity of 4,000,000 cubic feet of gas per day.

Negotiate for Car Plates

Interest in Market Focused on Railroad Requirements of 100,000 to 300,000 Tons of Steel—Eastern Business Double That of October

PLATE PRICES, PAGE 1453

New York, Nov. 27.—Interest in the plate market continues focused on the large tonnages involved for railroad cars, most of which are under negotiation. From 100,000 to 300,000 tons of steel is involved in the cars which apparently now are in sight here, and the placing of this business will have a material bearing upon the general situation in plates. The Petroleum Iron Works Co. has booked a contract for fabricating the stacks for the new power plant of the Public Service Corp. of New Jersey, Kearny, N. J. This work involves 750 to 800 tons. The Barbour Asphalt Paving Co., Maurer, N. J., is in the market for two tanks involving a total of 250,000 tons of plates.

An inquiry is current here for 30,000 tons of plates for a pipe line in Australia. It is not expected, however, that this business will be placed in this country. The American Locomotive Co. has taken bids on several hundred tons of plates.

On the usual run of business the eastern plate market continues 2 40c, base Pittsburgh, equivalent to 2.74c, delivered New York, but lower prices can be done on attractive tonnages. Eastern mills in some cases report that their business so far in November has been double that booked in the corresponding part of October. However, October was a very slow month in the plate market. The Matson Line is taking bids on a boat involving 3000 to 4000 tons of steel but it is not expected that final action will be taken until after Jan. 1.

Bridge Work to Come Out

Cleveland, Nov. 27.—Prospects are promising for a large tonnage of plates for railroad bridge work to come out in the near future. This week the market has developed no important new tonnages and business has continued chiefly of small lot character. No further developments have occurred with respect to several contracts for boat construction on the lakes which recently have been bid. Prices in the main are held at 2.50c, Pittsburgh, though occasionally where competitive conditions require it some of the smaller mills are going to 2.40c, Pittsburgh, though the market appears firmer.

Barges Replace Tank Inquiries

Pittsburgh, Nov. 27.—Large plate tonnages for oil storage tanks are absent from this market and to a small extent have been superseded by inquiries for barge work. Barge contracts placed by the United States engineers at Louisville, Ky., with the American Bridge Co. involve 16 barges, a total of 1880 tons of plates. Smaller jobs placed with the Dravo Contracting Co. by the United States engineers in the Chicago district involve approximately 500 tons. Additional barge work is pending but the only tank inquiries out call for small 100 to 300-ton lots of plates and are relatively unimportant. Some gas holder work is in process of being placed but details will not come out for a week or two. Individual gas holders usually involve 1000 tons apiece. Plates are unchanged at 2.50c, base Pittsburgh, notwithstanding numerous efforts to dislodge that level.

Car Buying is Bright Spot

Chicago, Nov. 27.—Expected heavy freight car buying still is the main prop of the plate market. Production is gaining on new business but mills expect to maintain their present gait through December, and by January will be starting in on the desirable car business. A few medium size oil storage tanks are in prospect. Platemakers can give prompt shipment when demanded. The plate price is firm at 2.60c, Chicago.

Eastern Business Improves

Philadelphia, Nov. 27.—The volume of plate buying has improved, but is mostly for immediate requirements. Some inquiry is current for first quarter contracts, on which mills are not quoting. The past week's business included several lots of 500 to 1000 tons each. The usual price continues to be 2 40c, Pittsburgh, or equivalent to 2.72c, Philadelphia.

Coke Production Per Oven Is High

What is believed to be a record for coke production per oven per day has been constantly maintained at the new by-product coke plant of the Weirton Steel Co., Weirton, West Va., since it was placed in operation in July of this yeor. This plant, consisting of 37 Becker-type ovens designed and built by the Koppers Co., July of this year. This plant, continuously on a coking time of less than 11 hours and 30 minutes, carbonizing over 1060 tons of coal per day or approximately 29 tons per oven per day, simultaneously with excellent by-product recovery.

The total coke produced averages 775 tons per day and the by-product yields per ton of coal carbonized have averaged 13.5 gallons of tar, 24 pounds of ammonium sulphate and 4 gallons of light oils. The total gas yield is approximately 11,400 cubic feet of 555 B.t u. debensolized gas per ton of coal carbonized, of which 65 per cent is surplus gas available for use in the steel plant. The coal used is straight high volatile from the Pittsburgh district, no Pocahontas or other low volatile coals being used.

With this coke, the furnace produced an average of 610 tons of pig iron per day, without using any scrap and with an unusually low coke consumption. This is thought to establish a record in pig iron production for one furnace when using straight lake ores and coke made from 100 per cent high volatile coal in by-product ovens.

Concrete Demand Better

Inquiries of Past Week Denote Better Feeling in Reinforcing Bar Market—Lettings Also Heavier—Little Price Weakness Exists

REINFORCING BAR PRICES, PAGE 1453

New York, Nov. 27.—Several fair sized lots of concrete reinforcing bars were sold in this district during the past week. One of the largest lots placed here recently involves 1000 tons for Japan. The amount of new work coming up here is small. Prices are unchanged. The current figure on concrete reinforcing bars for mill shipment is 2.40c, base Pittsburgh, equivalent to 2.74c delivered New York and this is obtained in most instances. On Pittsburgh warehouse shipments the current price is around 2.50c, base Pittsburgh. On shipments out of New York stocks the range is 3.00c to 3.10c delivered at consuming points.

Small Lot Interest Holds

Pittsburgh, Nov. 27.—Interest in small lots of concrete bars, usually around 100 tons each, still holds, although closing continues to be deferred. This is particularly true of the larger projects although the B. A. Groah Construction Co. is closing on 500 tons for the first unit of the foundry for Standard Sanitary Mfg. Co. at Baltimore. One 200-ton job was placed and later cancelled but action will be taken this week on several 100 to 200-ton lots such as the Salvation Army building, Academy Theater building enlargement, Young Men's Hebrew association building, chemical laboratory at Morgantown, W. Va., Odd Fellows' home for aged women at Grove City, and the Ferndale, Pa., bridge near Johnstown, Pa. Numerous 25 and 30-ton awards are noted and some of these have gone to fabricators at comparatively low figures, such as 2.20c and 2.30c, base Pittsburgh, but such levels only are obtainable when stocks are being liquidated. The regular market is quoted at 2.40c to 2.50c and the warehouse price of 2.50c gives some indication of advancing.

Inquiries Are Heavier

Cleveland, Nov. 27.—Inquiries for concrete reinforcing bars brought out during the past week were larger than for some time past. Although less than 2.75c, Pittsburgh, is being done for goods out of stock in a few cases, the quantity of material going at that price is not sufficient to be a market factor. A few dealers continue to unload stocks. New steel bars still are 2.40c. Rerolled bars at 2.10c to 2.25c, mill and even lower is sometimes done. One sale of 200 tons at a low price is reported. Some rerolling mills report better bookings.

Business Good; Prices Firm

Chicago, Nov. 27.—Reinforcing concrete bar business continues above both the general expectation and the seasonal average and the usual earl-winter, slump has failed to make its appearance. The largest award of the past few days is the Milwaukee Journal building requiring about 700 tons, which went to the Kalman Steel Co. The 650 tons for the Santa Fe railroad warehouse in Topeka, Kans., probably will be awarded this week. The 175 tons for the Wayne medical building at Ft. Wayne, Ind., also may be placed in a few days A large amount of bars for Illinos highway work is in prospect and work involving more than 1000 tons may be let shortly. Jobs requiring less than 100 tons are numerous and their aggregate tonnage is large. The price range is 2.75c to 3.00c.

Business Nearing Normal

Cincinnati, Nov. 27.—Placing of reinforcing bar business was somewhat better during the past week than for several weeks. At the same time inquiries appeared to be better in volume, leading to the belief that business in this vicinity may approach a more normal basis in the next month. Considerable work has been pending for some time, although only small tonnages are represented. Much of this is likely to be closed soon. Construction work in Cincinnati and vicinity has been virtually at a standstill during the past month owing to the carpenters' strike, but this dispute is about to be settled, with the organization of a new carpenters' union. The strike is the result of a controversy between the carpenters and sheet metal workers regarding the placing of steel window and door frames in buildings. Another project pending involves about 400 tons.

CONCRETE CONTRACTS PLACED

Awards this week	3,845 tons
Awards last week	460 tons
Awards two weeks ago	4,062 tons

700 tons, medical school, Vanderbilt University, Nashville, Tenn., to Concrete Steel Co.
700 tons, Milwaukee Journal building, Milwaukee, to Kalman Steel Co.
600 tons, Florsheim building, Chicago, to Kalman Steel Co.
500 tons, building for Public Service Corp. of New Jersey, Kearny, N. J., to Corrugated Bar Co.
350 tons, high school, Bridgeport, Conn., to Truscon Steel Co.
200 tons, Illinois highway work, to Concrete Steel Co.
180 tons, Goodman Mfg. Co. building, Chicago, to American System of Reinforcing.
175 tons, garage addition for Luick Ice Cream Co., Milwaukee, to Corrugated Bar Co.
150 tons, footings for plant of Standard Sanitary Mfg. Co., Birmingham, Ala.; by Ferro Construction Co. to Dudley Bar Sales Co.
135 tons, sewage disposal plant at Huntington, Ind., to Kalman Steel Co.
105 tons, Meyercord building, Chicago, to American System of Reinforcing.
50 tons for the Arverne high school, Flushing, N. Y., to Concrete Steel Co., 200 tons still pending.

CONCRETE CONTRACTS PENDING

650 tons, Sante Fe railroad warehouse at Topeka, Kans.; bids in.
270 tons, sewer for city of Cincinnati; bids in.
200 tons, Richman Bros. Co., building, Cleveland; pending.
200 tons, P. A. Geier Co. building, 540 East 105th street, Cleveland; pending.
150 tons, school at Greensburg, Pa.; early action expected.
150 tons, garage at Eighteenth and Prospect streets, Cleveland; pending.
150 tons, Harding junior high school, Cleveland; revised plans pending.
150 tons, Ferndale, Pa., bridge near Johnstown, Pa.; bids close Dec. 3.
117 tons, Y. M. H. A. building, Pittsburgh; early action expected.
117 tons, South Hills high school, Pittsburgh; action deferred.
100 tons, Salvation Army building, Pittsburgh; bids close Nov. 30.
100 tons, chemical laboratory at Morgantown, W. Va.; bids close Dec. 22.
100 tons, Odd Fellows' home for aged women, Grove City, Pa.; bids being taken.
100 tons, warehouse for Kaufman & Baer Co., Pittsburgh; bids to be asked soon.

Pipe Mills

Continue to Operate at 90 Per Cent —Cast Sales Increase

PIPE PRICES, PAGE 1453 AND 1508

Pittsburgh, Nov. 27.—Aggregate buying of pipe is important from a tonnage standpoint but individual orders are not large. Customers having tonnage on order continue to call for deliveries. New buying is limited to needs in sight and orders usually comprise single carloads, mainly buttweld sizes. Deliveries of buttweld pipe still are four to six weeks behind. Pipe producers are operating at about 90 per cent. Lapweld pipe can be had in two or three weeks. Oil country demand is at a low point. Nothing has occurred indicative of a revision of the April 19, 1923 price card.

Gas Companies Want Large Lots

New York, Nov. 27.—Action was taken this week on 3000 tons of six to 20-inch cast iron pipe by the Brooklyn Union Gas Co. and award will be made shortly by the Consolidated Gas & Electric Co. on more than 10,000 tons. Private demand continues brisk, but municipal interest is dull. Prices are unchanged.

Utilities Placing 1924 Needs

Chicago, Nov. 27.—Cast iron pipe makers are taking a fair volume of business from utilities which now are ordering requirements for 1924. This business is understood to be going without concessions from present levels. Cast pipe prices are not reflecting the recent advances in southern pig iron. Public lettings are growing scarcer and the only large tonnage before local makers is the 4400 tons upon which Detroit may close today.

Lettings Continue Small

Birmingham, Ala., Nov. 26.—Cast iron pipe makers report that a number of lettings were received the past week, the problem of winter delivery having effect. The United States Cast Iron Pipe & Foundry Co., now has nine DeLavaud machines in operation. Considerable of this product is to be shipped to the Far West and prospects are that operations will continue steady for several months.

CAST IRON PIPE PLACED

3000 tons, 6 to 20-inch pipe, Brooklyn Union Gas Co., Brooklyn, to unnamed makers.
441 tons, for Whiting, Ind., to American Cast Iron Pipe Co.
274 tons, work in Beaumont, Tex., to American Cast Iron Pipe Co.
228 tons, Little Rock, Ark., to American Cast Iron Pipe Co.

Strip Backlogs Grow

STRIP PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Notwithstanding the absence of an aggressive movement on the part of hot and cold-rolled strip steel producers to gather in contracts for first quarter, a number of consumers have made arrangements or have filed actual specifications for fair sized tonnages to be delivered during

that period. This is sufficient in the aggregate to give several makers in this locality good business backlogs for one or two months of the quarter and producers generally feel more encouraged than a few weeks ago. Some customers are not contracting but will continue their policy of buying from month to month. A few orders for shipment this month enable makers to maintain a 60 or 65 per cent operation but December probably will be lower as there is little buying for immediate delivery. Prices are unchanged on the basis of 3.00c to 3.15c, base Pittsburgh, for hot and 5.00c, base Pittsburgh, for cold.

Warehouse Prices Hold As Demand Slackens

WAREHOUSE PRICES, PAGE 1504

New York, Nov. 27.—The warehouse market is essentially unchanged. Prices are steady, and demand is being well maintained for this season of the year. In fact, in some quarters the market is regarded as a little more active than a week ago. One feature of current trading is a fairly lively export demand from Cuba, Porto Rico and Central America.

Demand Well Maintained

Philadelphia, Nov. 27.—Demand for steel products out of warehouse is maintained at a high level, in spite of the usual falling off in the autumn. Prices are unchanged and display fair firmness in practically all lines.

Better Feeling Noted

Cleveland, Nov. 27.—Feeling exists among local warehouse dealers that the market is getting stronger, although November business is reported as above that of October by but few jobbers. Prices are firm, with little shading coming out although one store is reported having cut $2 a ton in special cases. Demand for building materials continues strong for this season of the year.

Prices Again Reduced

Chicago, Nov. 27.—Warehouses here have reduced prices on bolts, nuts, washers rivets and larg screws. This action was prompted by a slight falling off in demand. Machine bolts, both large and small, which were 45 and 5 off now are 55 and 5 off. Carriage bolts, large and small, which were 40 and 5 off are now 50 and 5 off. Coach or lag screws which were 50 and 5 off now are 60 and 5 off. Hot pressed nuts, square or hexagon, blank or tapped, which were $2.50 off list are now $3.50 off. Wrought washers were $4 off list and are now $4.25. Tank rivets in keg lots were 50 and 5 off but are now 60 off; in less than keg lots the old price was 45 and 5 off while the new one is 55 off. Stove bolts were 65 off but are now 70. Bolt ends were 45 and 5 off and now are 55 and 5.

Demand Good for Season

Detroit, Nov. 27.—Buying of iron and steel products from jobbers continues of fair tonnage for this time of the year. Movement of sheets since the recent cut has shown some improvement but sales are not as large as expected.

More Interest in Sheets

Larger Tonnage Pending Before Valley Mills, as Sentiment Improves—Prices Seek Firmer Level—Good Bookings by Leading Maker

SHEET PRICES, PAGE 1453

Pittsburgh, Nov. 27.—Of chief importance in the sheet market is the fact that, notwithstanding the absence of buying or contracting by automotive consumers of full-finished sheets, consumption is proceeding along fairly heavy lines. Stocks are rapidly diminishing to the subnormal point, if they have not already reached that, and automobile, truck and tractor production programs for next year are larger than ever.

Independent sheet manufacturers and the American Sheet & Tin Plate Co. alike report an absence of full-finished sheet business from automotive interests and apparently this group of manufacturers is making a strong effort to develop a lower price than the going market of 5.35c, base Pittsburgh, by $5 per ton. Some would be content with a restoration of the old differential which would make the price 5.20c, a decline of $3 per ton. So far as reported, but one automobile manufacturer, a large Michigan interest, has been able to develop a 5.10c, base Pittsburgh, figure and this really is not a market factor since it applied to "run of mill" sheets. Practically any producer of full-finished sheets would consider this tonnage more desirable and profitable at 5.10c than similar tonnages at the 5.35c figure, in view of the rigid inspection to which it is subjected. Large tonnages were offered here last week at 5.10c to 5.20c, but large producers have refused to quote below 5.35c.

While independents continue to complain about the lack of buying for either prompt or future shipment, the leading interest reports good bookings of blue annealed, black and galvanized, some fair size orders for the latter being taken for export. Among recent orders for blue annealed sheets is one for a large tonnage by an agricultural implement maker. Concessions on blue annealed are rare. The American company is operating 10 of its 11 plate and jobbing mills, indicating the sustained buying in blue annealed sheets. Several roofing sheet orders have been placed by southern interests. While undoubtedly prices are strengthening in sheets, the adroit buyer of black still is able to place tonnage at 3.75c, and galvanized is available at 4.90c, or $2 under the regular market figures of 3.85c and 5.00c, base Pittsburgh, respectively. Operations continue to average between 70 and 80 per cent of capacity but the leading interest reached 85.2 per cent this past week in sheet mills, the highest rate for some time past and as high as it expects to reach this year.

Japan Places Tonnage

New York, Nov. 27.—More sheet tonnage has been placed in this country during the past week by Japan. This involved 18,000 tons of black sheets, and the business was distributed with the Inland Steel Co., Wheeling Steel Corp. and Trumbull Steel Co. It is stated on reliable authority that Japan now has purchased about one-third of the entire sheet tonnage of which it is in need for immediate requirements.

More Tonnage in Market

Youngstown, O., Nov. 27.—Improved sentiment in the sheet market throughout this district which became apparent a week ago is more pronounced. More tonnage is in the market and prices are seeking a firmer level. In recent weeks surplus material has been sold regardless of cost. Stocks lists circulated widely by various sheet producers served to absorb much of the demand that should have been entered for production on mill books. This resulted in a gradual depletion of stock on mill floors. Today stocks on certain mill floors are not in excess of those carried under normal conditions. However, they are unbalanced at a number of plants. Prospective buyers are finding it difficult to pick up stock items to meet their needs and are compelled to enter tonnage against production. This explains to a large extent why more tonnage is in the market today than a week ago, and the mills gradually are abandoning their recent policy of seeking tonnage below the general market level. While consumers found it comparatively easy a few weeks ago to obtain prime one-pass black at 3.60c, Pittsburgh, they now find it more difficult to duplicate this price. One producer has withdrawn all prices that apply on his stock lists in circulation and is quoting full prices instead. While the 3.75c price on black sheets has not disappeared entirely, the majority of producers here are becoming more confident of their position and gradually are bringing quotations in line with the full schedule of the leading interest. Blue annealed is quotable at 2.90c to 3.00c, black from 3.75c to 3.85c and galvanized at 5.00c, base Pittsburgh.

Still Taking Japanese Business

Chicago, Nov. 27.—The leading independent sheetmaker has taken about 2000 tons more of Japanese black sheets for reconstruction work in the past few days. A small amount of sheet business is constantly coming in but production continues in excess of new business. Orders taken for first quarter delivery thus far are only fair. Prices are reported somewhat firmer, although local makers as a whole have adhered to the levels of 3.00c, Pittsburgh, for blue annealed, 3.85c, for black, and 5.00c, for galvanized.

Place First Quarter Contracts

Philadelphia, Nov. 27.—A number of consumers have placed first quarter contracts for blue annealed, black and galvanized sheets, apparently at the full prices in all instances, 3.00c, 3.85c and 5.00c, Pittsburgh, respectively. Current business is of moderate size. While shading of $2 per ton has not entirely disappeared it is less frequent, and the market is firmer than a few weeks ago.

Structural Buying Better

Public Service Corp. of New Jersey Lets 9800-Ton Order—Bridge and Industrial Inquiries Large—Prices Firmly Maintained

STRUCTURAL SHAPE PRICES, PAGE 1453

New York, Nov. 27.—An added feature in the local structural market is an active demand for bridge and industrial work. The Public Service Corp. has closed on 9800 tons for its proposed power plant in Kearny, N. J., and about 8000 tons of new industrial work is pending. The amount of bridge work active is the largest in some time, there being in four projects alone fully 16,000 tons. This includes the Perth Amboy bridge, previously noted, on which bids are in. An outstanding inquiry calls for 5000 tons for bridge work for the Pennsylvania railroad at Sunbury, Pa. As has been the case for some time past, demand for lofts and apartments continue active. Formal bids have been asked on 18,000 tons for the proposed American Telephone & Telegraph building. Plain material prices are holding at 2.50c, Pittsburgh, but quotations on fabricated material are tending upward.

Fabricators Booked Far Ahead

Chicago, Nov. 27.—Most fabricators are booked two to six months ahead, but competition remains keen among smaller ones. Each week sees more office building, theater and apartment hotel projects announced for spring. December and January are expected to see bids opened on many building proposals and awards made provided the matter of cost is satisfactory The redesigned Ford factory at St. Paul, now involving 6300 tons, may be let this week. The Union League club building entailing 5300 tons also may go forward. The plain material price continues 2.60c, Chicago.

Small Jobs Prevail

Boston, Nov. 27.—Total tonnage of shapes placed during November in New England will drop below that of October. A fair run of small jobs keeps the market active. The price on plain material is 2.40c Pittsburgh.

Larger Contracts Placed

Pittsburgh, Nov. 27.—Larger structural shape orders were noted this past week in the placing of contracts with one or two steel companies for first quarter shape requirements by several fabricators. The price is reported to have been 2.50c, base Pittsburgh, which is firmly adhered to by mills in the Pittsburgh area. Awards of the week involved no outstanding tonnage. Small inquiries are fairly numerous and include the Salvation Army building here together with some government projects in various sections on which awards should be placed within the next month or two. Considerable interest is in evidence here among local fabricators over the possible early placing of 26,000 tons for the Ford Motor Co.'s new steel plant at River Rouge, Mich.

Buyers Still Hesitate

Cleveland, Nov. 27.—Buyers of large tonnages of structural shapes in this district still postpone action on pending projects. Largest award of the week was that of 250 tons for the Jewish temple to T. H. Brooks Co. Action on the Brotherhood of Locomotive Engineers bank is expected shortly following the official announcement of the award of general contract to George A. Fuller Co. About 6300 tons of shapes is involved. A large tonnage will be required for the hydroelectric plant at Cincinnati costing approximately $20,000,000, action on which is to start next spring. Large railroad bridge requirements are shaping up in the hands of engineers' departments. Small tonnage inquiries continue of sufficient number to book local fabricators to normal for this season. Plain material price is firm at 2.50c, Pittsburgh.

Demand Somewhat Improved

Philadelphia, Nov. 27.—Demand for structural shapes in this district is spotty although somewhat improved. Several good lots are pending in the market outstanding of which is 5000 tons of plain material for the Pennsylvania railroad for shop work. The usual price continues 2.40c, Pittsburgh, equivalent to 2.72c, Philadelphia, with 2.35c, Pittsburgh, being done on exceptional lots.

STRUCTURAL CONTRACTS PLACED

Building awards this week..... 23,139 tons
Building awards last week..... 13,123 tons
Building awards two weeks ago.. 12,231 tons

9800 tons, power plant for Public Service Corp., Kearny, N. J., to Bethlehem Steel Co.; plans for additional 2000 to 3000 tons to come out later.
3000 tons, Steinway building, New York, reported last week as placed, to American Bridge Co.
2800 tons, James Monroe high school, New York, to Jones & Laughlin Steel Corp.
1250 tons, school No. 210, New York, to Hedden Iron Construction Co.
1200 tons, addition to Erasmus high school, New York, to Bethlehem Fabricators, Inc.
1000 tons, Gilbert loft building, Thirty-fifth street, New York, to McClintic-Marshall Co.
900 tons, Bell Telephone building, Camden N. J., to Phoenix Bridge Co.
700 tons, Y. M. H. A. building, Paterson, N. J., to Fagan Iron Works.
700 tons, Masonic building, Springfield, Mass., to Lehigh Structural Steel Co.
700 tons, telephone building, West Seventy-third street, New York, reported awarded to Eidlitz & Ross.
600 tons, apartment, Eighty-fifth street, New York, to Harris Structural Steel Co.
573 tons, state highway bridges in Minnesota, to Illinois Steel Bridge Co., Clinton Bridge Co. and others.
500 tons, power house and electrical building for Purdue university, Lafayette, Ind., to Rochester Bridge Co.
500 tons, storehouse, Honolulu, Hawaii, to Davidson & Nicholson, California.
300 tons grandstand, Annapolis, Md., to Chesapeake Iron Works.
300 tons, bridge for Boston & Maine railroad at Gorham, N. H., to McClintic-Marshall Co.
250 tons, telephone exchange, Portland, Me., to Maguire & Jones.
250 tons, bridge at Wilbraham, Mass., to McClintic-Marshall Co.
250 tons, municipal power house, Omaha, Nebr., to the Omaha Steel Works.
250 tons, Jewish temple, Cleveland, to T. H. Brooks Co.
216 tons, hydroelectric plant and dam for Northeastern Power Co. in Wisconsin, to Worden-Allen.
200 tons, street span for Gimbel Bros., New York, to Taylor-Ficther Steel Construction Co.
200 tons, bridge repairs, New York Central, divided among Shoemaker Bridge Co., Fort Pitt Bridge Works, McClintic-Marshall Co., and Bethlehem Steel Co.
150 tons, coal tipple for Elkhorn field, Pittsburgh to Pittsburgh-Des Moines Steel Co.
150 tons, repair shop for National Biscuit Co., New York, to Hay Foundry & Iron Works.
100 tons, New York Central bridge, Niagara Falls, N. Y., to McClintic-Marshall Co.

STRUCTURAL CONTRACTS PENDING

18,000 tons, American Telephone & Telegraph Co., New York; formal bids asked.
7000 tons, Commonwealth hotel, New York; Thompson-Starrett taking figures on general contract.
6300 tons, revised plans on Ford factory in St. Paul; bids in.
5000 tons, five schools, New York; specifications expected out this week.
5000 tons, two bridges for Pennsylvania railroad at Sunbury, Pa.; bids asked.
4000 tons, bridge at Perth Amboy, N. J.; Stillman, Delehanty & Ferris Co., low on general contract.
3000 tons, bridge repairs, New York Central; bids asked.
2000 tons, power house, for Virginian railway, bids asked.
2000 tons, insurance building, Boston; bids being taken.
1500 tons, school No. 202, New York; T. A Clark, general contractor.
1500 tons, school No. 99, New York; Frymner & Hanna Co., general contractor.
1500 tons, plant addition for American Locomotive Co., Schenectady, N. Y.; bids asked.
1500 tons, Los Angeles Gas & Electric Co. building, Los Angeles, bids in.
1000 tons, Minskoff apartment, New York; pending.
1000 tons, Bing & Bing apartment, West Forty-fifth street, New York; bids asked.
500 tons, Y. W. C. A. building, Trenton, N. J.; new bids asked.
400 tons, plant addition for Crawshaw Carpet Co., Newburg, N. Y.; pending.
300 tons, Arbana loft buliding, West Thirty-fifth street, New York; pending.
300 tons, apartment, 418 East Fifty-seventh street, New York; Hagerman & Harris, general contractor.
300 tons, bridge across Merrimac river, Haverhill, Mass.; bids being taken.
275 tons, Carbon Steel Castings Co. building, Lancaster, Pa.; bids in.
200 tons, nurses' home, Niagara Falls, N. Y.; postponed.
200 tons, nurses' home, Erie, Pa.; postponed.
200 tons, Richman Bros. Co., Cleveland; pending.
200 tons, state highway bridge, Point Pleasant, N. J.; bids in.
Tonnage not stated, factory addition for P. A. Geier Co., 105th street, Cleveland; pending.

Production of Refractory Brick Increases

Figures on fire clay and silica brick production as reported to the Refractories Manufacturers' association, Pittsburgh, for October registered increases over September as did shipments. Fire clay production went up from 71 per cent in September to 77 per cent in October, while silica increased 8 per cent to 44 per cent in the latter month. Shipments increased from 64 to 71 per cent in fire clay and from 36 to 41 per cent in silica. Net new business fell off 1 per cent in each case.

Fire clay brick on Oct. 1 represented 226 per cent of capacity but unfilled orders only 81 per cent. This apparent great difference is explained by the fact that such a large quantity of special shapes are made up in advance of the receipt of actual orders that while the figures show a total of 168,782 237 fire clay brick in 9-inch equivalents on hand Oct. 31, the actual "free" stock available for sale only is approximately 41,000,000 brick, or 55 per cent of the monthly producing capacity of those reporting.

A similar condition exists in silica brick for, whereas silica brick reported as being on hand Oct. 1 aggregates 35,210,516 brick, or 156 per cent of

capacity, only 9,600,000 brick are available for open sale, or 43 per cent of capacity reporting, with unfilled orders representing 106 per cent on hand. The difference between 9,600,000 actual stock on hand and the 35,210,516 brick reported as being on hand is represented by the special shapes made up in advance of the actual orders. The following list gives the detailed figures:

FIRE CLAY BRICK

	Oct.31,1923	Sept.30,1923
Capacity reporting	74,212,811	74,563,060
On hand last day preceding month	164,324,610	159,683,854
Production	57,774,841	52,927,965
Shipments	53,316,214	48,089,182
On hand last day current month	168,782,237	164,522,637
New orders received during month	45,870,737	46,048,201
Cancellations	602,722	108,351
Net new business	45,268,015	45,939,850
Unfilled orders last day current month	60,735,806	69,440,968

SILICA BRICK

	Oct.31,1923	Sept.30,1923
Capacity reporting	22,565,500	22,565,500
On hand last day preceding month	34,473,914	34,356,792
Production	10,024,736	8,232,857
Shipments	9,288,134	8,115,735
On hand last day current month	35,210,516	34,473,914
New orders received during month	7,133,579	7,163,593
Cancellations	55,936	64,868
Net new business	7,077,643	7,098,725
Unfilled orders last day current month	23,974,974	26,185,465

Production of Malleable Castings Gains

Washington, Nov. 27.—Production of malleable castings in October, totaling 62,238 tons, was a gain of 1308 tons over September, but was still below the figures of August, June and May, according to reports of the department of commerce. October operations were at 59.9 per cent of capacity. The failure of operations to increase was due to the fact that 116 companies reported in October with increased total capacity in comparison with 112 companies in September. Comparisons of production, bookings and monthly capacity since May 1923 are as follows:

	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
May	64,726	71	52,898	91,174
June	65,168	67.7	42,067	96,240
July	57,881	58.9	41,723	98,241
August	68,069	66.0	39,830	103,068
September	60,930	59.9	38,636	101,750
October	62,238	59.9	48,621	103,837

Car Loadings Drop

Washington, Nov. 27.—Total loadings of freight cars during the week ended Nov. 17 dropped to 991,745. This is the first week below the million mark for some time past, and marks the approach of the winter season. The net car surplus accordingly mounted, the total being 67,218.

Imports Drop Sharply

Philadelphia, Nov. 27.—Imports of iron and steel and ores into this port during the week ended Nov. 24, dropped sharply. Sweden sent 7230 tons of iron ore British India 1000 tons of chrome ore, Germany 100 tons of manganese ore, and England 35 tons of scrap steel.

Car Orders Are Placed

Southern Railway Awards 1000—Pennsylvania Allocates 200,000-Ton Rail Order Among Three Mills—Track Material Demand Heavier

RAILROAD TRACK MATERIAL PRICES, PAGE 1453

New York, Nov. 27.—Directors of the Pennsylvania railroad have approved orders for 200,000 tons of rails for delivery over the first half of 1924. The United States Steel Corp. will supply 94,000 tons; the Bethlehem Steel Corp., 94,000 tons and the Inland Steel Co. 12,000 tons.

The Louisville & Nashville railroad has placed an additional 10,000 tons of rails with the Tennessee Coal, Iron & Railroad Co. This makes a total of 75,000 tons which this road has placed with this maker for the first half of next year. The South Manchurian railways opened bids Nov. 21 on 11,000 tons of rails as well as on a considerable structural tonnage and other materials. Additional rail inquiries have come from Japan, Chile and Brazil, but the total tonnage involved is not large.

The Jones & Laughlin Steel Co. has booked 15,000 tons of tie plates for the Baltimore & Ohio railroad.

Heavy car inquiry continues on the point of coming into the market. Demand is comprised of relatively small lists, with orders scattered. Locomotive demand is light aso, and includes the purchase of one locomotive by the Louisville, Henderson & St. Louis from the American Locomotive Co.

Possible car buying expected to materialize before the close of the present year includes 10,000 for Southern Pacific, 6000 for Norfolk & Western, from 6000 to 8000 for Pennsylvania, 3500 for Southern Railway, and 1000 for Chicago & Alton.

Rail Buying Delayed

Boston, Nov. 27.—The bulk of the buying for 1924 delivery on the part of New England roads still is held up. The Central Vermont bought 5300 tons of standard rails during the past week and some of the trolley lines placed substantial orders for track fastenings and specialties.

Now Talk 95,000 Cars

Chicago, Nov. 27.—At present between 16,000 and 18,000 freight cars are before local car builders and the expectation is that substantially all of this number will be placed shortly. The steelmaking interest which has been looking for the purchase of 80,000 freight cars for 1924 delivery now states that the railroads are contemplating the purchase of 95,000, most of which it believes will materialize. Proposed car buying continues to be the chief mental stay of the finished steel market here. The Cotton Belt railroad has put out an inquiry for 1000 box cars and the Philadelphia & Reading is out for 1000 hopper cars. Car orders of the week reported total about 1500, the largest lot being 1000 for the Southern.

The leading Chicago rail producer expects to roll 35,000 tons of the recently allocated Pennsylvania order and the smaller rail mill 12,000 tons. The railroads are specifying better against their orders. About 1000 tons of light rails were placed last week. The quotation of 2.25c on light rails is soft.

The New York Central railroad is about to inquire for its first half 1924 requirement for track fastenings, which includes 30,000 tons of tie plates and 100,000 kegs of spikes and bolts. This business probably will be placed largely in the East. In the past week 15,000 kegs of spikes and bolts were placed in this district. Inquiries for track fastenings are heavier.

Limited Activity Prevails

Pittsburgh, Nov. 27.—Limited activity continues to prevail in light rails due to the lack of expansion in coal mining. Numerous wagon mines are idle and mines located on railroads do not average above 65 or 70 per cent. Single carload orders for light rails rule with an occasional 100-ton lot. Rerolling mills continue to offer sharp competition and have been selling light rails as low as 2.85c. Accessory orders lately have been few and the report that the Southern Pacific railroad placed a 20,000-ton tie plate order with a local independent steel company is denied here. Prices on track accessories are unchanged on the basis of quoted levels.

Heavy Inquiries Put Out

Cleveland, Nov. 27.—Heavy inquiries for track fastenings are before local producers. The New York Central system is inquiring for 70,000 kegs of track spikes or 7000 tons and 35,000 kegs of track bolts involving 3500 tons. Another railroad is in the market for 15,000 kegs of heat treated track spikes. All this business is for first quarter delivery. Some smaller railroad inquiries for track accessories are pending.

CAR ORDERS PLACED

Pittsburgh & Lake Erie, 36 passenger coaches to Standard Steel Car Co. and a similar number to the American Car & Foundry Co.

Canadian National, six combination coaches, to Railway Storage Battery Car Co.

Anaconda Copper Co., 24 dump cars, to Koppel Industrial car & Equipment Co.

Chesapeake & Ohio railroad, 25 cabooses, to Newport News Shipbuilding & Dry Dock Co.

Southern Railway, 1000 box cars, to American Car & Foundry Co.

Alabama & Vicksburg railroad, 100 50-ton gondolas, to American Car & Foundry Co.; 200 single-sheated 40-ton box cars and 100 50-ton flat cars, to Chickasaw Shipbuilding Co.

Central Railroad of New Jersey, 50 coaches, to Standard Steel Car Co.

Great Northern railroad, 100 underframes, to St. Paul Foundry Co.

Great Northern railroad, 500 stock cars, to own shops.

CAR ORDERS PENDING

Rio Grande do Sul, Brazil, 200 flat cars; pending.

Northwestern Railway of Brazil, recently noted as inquiring for six passenger coaches, also in market for 400 miscellaneous freight cars.

Western Pacific, 200 automobile cars; pending.

Philadelphia & Reading railroad, 1000 70-ton hopper cars; pending.

Cotton Belt railroad, 1000 box cars; pending.

Western Pacific, 200 automobile cars; pending.

Norfolk & Western, repairs to 1000 hopper cars; pending.

New York Central, conversion of 500 gondolas to flat cars; and 500 box cars ot stock cars; pending.

The Nonferrous Metals

Great Fluctuations in Sterling Are Important Factor in Metals—Tin and Copper Up—Zinc Firmer

	Copper—Electro delivered	Copper—Lake delivered	Spot Straits New York	Lead† New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Nov. 21	13.12½	13.37½	44.75	6.95	6.25	26.00	9.00	29.00
Nov. 22	13.00	13.37½	44.87½	6.95	6.27½	26.00	8.87½	29.00
Nov. 23	13.00	13.37½	44.37½	6.95	6.32½	26.00	8.87½	29.00
Nov. 26	13.12½	13.50	46.75	7.00	6.40	26.00	8.87½	29.00
Nov. 27	13.12½	13.50	46.62½	7.00	6.37½	26.00	8.87½	29.00

†Outside market quotation.

NEW YORK, Nov. 27.—Sensational ups and downs in sterling exchange rates have exercised a dominant influence in the international metal markets the past week, affecting the foreign equivalents of metal prices first adversely then constructively. On Monday Nov. 19 sterling touched $4.26 and on Monday Nov. 26 it reached $4.40. The relationship of the American and British markets accordingly were greatly affected.

Recently there has been a tendency among the professional members of the metal trade to take their cue to the foreign situation from the movement of sterling and the New York stock market and the improvement in both this week has helped sentiment considerably, both among buyers and sellers. Copper had a superficial reaction to 12.62½c, refinery, based on pressed offers of November specification copper. The major market, however, has not broken 13.00c, delivered. No change was made in mill prices. Casting dropped to 12.50c; lake to 13.25c, delivered. Today prices were ¼ cent higher.

The zinc market recovered to 6.40c, St. Louis Monday with the advance in the London price equivalent to 6.61c, or close to the export point. Ore prices have been strong around $41 at Joplin, due to the restricted production. Galvanizers have been buying moderately for December shipment.

The lead market has been strong with sales for middle western December delivery at 6.70c, East St. Louis, and for December shipment to the East at 7.00c New York. The London market recently has been more attractive for Mexican ore than New York.

Tin has engaged in spectatcular movements, attributed to the speculative activities of London bull operators, said to be headed by Richard. On Nov. 26 the London tin price advanced over £8 while the New York price jumped 2c a pound from Friday to Monday. There has been no reasonable news on which to base the movement excepting speculation based on expectation of favorable Nov. 30 statistics.

The antimony market has been quiet and somewhat reactionary at 8.87½c, duty paid, for spot metal.

Inquiry for virgin ingot aluminum for 1924 delivery has been heavy. Prices are firm at 26c for 98 to 99 per cent and 27c for 99 per cent.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min.	21.00
High brass	17.75
Zinc, ga. 9 to 18 (plates ½c less)	9.25
Lead, full sheets (cut ¼c more)	10.75
Aluminum, base 18 ga. and up	35.40
SEAMLESS TUBES	
High brass	22.00
Copper	23.50
RODS	
High brass, round, ⅝ to 2½-inch	15.50
Naval brass rods	18.25
WIRE	
Copper	15.87½
High brass	18.25

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.25 to 9.50
New York	8.50 to 9.00
Chicago	9.00 to 9.25
HEAVY YELLOW BRASS	
New York	5.50 to 6.00
Chicago	7.00
Cleveland	6.75 to 7.25
ZINC	
New York	4.25 to 4.50
Cleveland	3.75
Chicago, dross	4.25
HEAVY COPPER AND WIRE	
Cleveland	10.50 to 11.00
New York	10.25 to 10.75
Chicago	10.75 to 11.00
RED BRASS TURNINGS	
New York	7.50 to 8.00
Cleveland	8.25 to 8.75
Chicago	8.50 to 9.00
YELLOW BRASS TUBING	
Cleveland	6.00 to 6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.25
New York	6.00 to 6.50
Chicago	6.75 to 7.00
ALUMINUM BORINGS	
Cleveland	9.50 to 10.00

Plan New Power Plant

Cincinnati, Nov. 27.—Announcement has been made that the Union Gas & Electric Co. will erect its new $20,000,000 generating plant in the southwestern part of Hamilton county, where the Big Miami river empties into the Ohio river. The company has purchased an option on 1400 acres of land and engineers are now at work making surveys. The company plans to develop a great industrial community there. The location has both river and rail transportation advantages. The new plant was made necessary because of the increased demand for electric power. Four to eight steam turbine generators of enormous power will be erected as needed in the new plant. There will be an administration building, power house and latest devices for the handling and storing of large quantities of coal. W. W. Freeman, president, said that work on the project would start next April and that it would require two years to complete the plant.

The Wickwire Spencer Steel Co. for the nine months ended Sept. 30 last reports net income of $699,504 after expenses, depreciation and interest. Sales aggregated $21,938,425. The balance sheet as of Sept. 30, 1923, showed cash of $619,322, and notes payable of $3,865,000.

Shading Noted

In Price of Silica Brick—Little New Construction Opening

Pittsburgh, Nov. 27.—Refractory users are content to place orders for requirements only. Under curtailed operating schedules they easily restrict these to 50,000 or 100,000 brick at a time, either fire clay or silica. Occasionally an order for 140,000 or 150,000 brick is placed and on rare occasions larger ones find their way to the books of the producers. Kiln operations continue to average 65 to 70 per cent of capacity.

While the official price on silica brick maintained by larger producers is unchanged at $42 and several orders were placed this past week at that level, including one for 140,000, three or four producers are naming a $40 figure, and one or two have gone as low as $38. The Weirton Steel Co. is understood to be placing an order for 150,000 and it is doubted if over $40 will be paid. Fire clay is firmer at a $42 minimum and some orders were placed at as high as $45 this past week. Little in the way of new construction is on the boards, although a few drawings are being received by brick manufacturers with requests for figures. Small orders are placed from time to time for chrome brick, 5000 to 25,000 brick at a time, with an occasional carload of magnesite. Prices on these two grades still are unchanged at $50 and $65, respectively.

Refractories

FIRE CLAY BRICK (Per 1000 f.o.b. works)	
Pennsylvania, No. 1	$42.00 to 45.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	42.00 to 45.00
Ohio, No. 2	35.00 to 38.00
Illinois, No. 1	45.00 to 48.00
Illinois, No. 2	42.00 to 44.00
Kentucky, No. 1	42.00 to 44.00
Kentucky, No. 2	37.00 to 39.00
Missouri, No. 1	38.00 to 40.00
Missouri, high grade	48.00 to 50.00
Maryland, No. 1	44.00 to 51.00
Maryland, No. 2	40.00 to 42.00
SILICA BRICK	
Pennsylvania	40.00 to 42.00
Chicago	49.00
Birmingham	50.00
MAGNESITE BRICK (Per Net Ton Seaboard Base)	
9 x 4½ x 2½	$65.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$50.00

Missouri Brick Reduced

Chicago, Nov. 27.—Market conditions have brought about a reduction of $2 per 1000 in Missouri fire clay brick, making Missouri No. 1 quotable at $38 and $40 and Missouri high grade $48 to $50. The cut has prompted a fair amount of business.

Northwest Demand Active

Promise of Japanese Buying Stimulates Expectations—Shipbuilding and Waterworks Extensions Furnish Market for Material—Prices Steady

SEATTLE, Nov. 23. — While there are no salient features in the Northwest iron and steel trade, business is satisfactory for the season. Considerable construction work is still under way and new projects are being announced. The turnover shows some easing off but jobbers believe business will be heavier during the next month than a year ago, and 1923 has shown substantial gains over 1922 in all lines.

M. Miyake, a member of the Mitsubishi Trading Co., Tokio and Yokohama, passed through Seattle this week enroute to Europe to take charge of the company's London office. While in the United States he will survey conditions in the iron and steel market. He predicts large orders for iron and steel will shortly be placed in this country for reconstruction. "It is almost impossible," he said, "to make an estimate of the steel, iron and other construction material that will be required. We are already busy on reconstruction and it will probably be some time before the full volume of orders reaches this country."

Interest in shipbuilding attaches to bids to the Alaska Steamship Co. of this city, for the construction of a steel combination passenger and freight liner for service between this city and Alaska. The vessel is similar to the $1,000,000 steamer Alaska built for the same company by the Todd yards, Tacoma, last winter. The order is expected to be placed soon as delivery is desired by early summer, 1924.

Seattle will open bids Dec. 14 for a water project estimated to cost $1,500,000. This includes an intake, outlet conduit, controlling works and three steel pipe lines at Lake Youngs, in addition to the construction of a 10,000-foot tunnel 8 feet in diameter. Two of the three pipe lines will be 48 and 60 inches in diameter and 1900 feet long. The third will be 66 inches in diameter and 7900 feet in length.

Pig Iron and Coke

The pig iron market shows practically no change from last week. While the British market is strong, declining exchange has served to hold prices for first quarter at a standstill, the best grades of United Kindom iron still being quoted at $34. Several hundred tons have been sold for delivery here during first quarter, Glengarnock and hematite predominating. Importing houses have fair stocks of iron which are being sold spot at $35 and $35.50. Locally, buying has been on a hand-to-mouth basis for some time but increased activity is foreseen. Importers regard the outlook as firm and that prices are likely to advance. The coke situation is unchanged, the normal volume of Fernie, B. C., coke being brought into this territory.

Bars, Plates and Shapes

There is no marked activity in finished steel, the turnover being greater than at this period a year ago. Plates are possibly showing better demand as considerable repair work is under way. The local steel mill is operating part time. Business in bars has slackened. While no large tonnages are in sight the volume of small orders is fair and prices remain firm. Small shapes are moving better than larger. Fabricators have some work in hand although the volume of business is unsteady. One export inquiry for 500 tons of steel bars came from Japan during the week but the business has not yet been placed.

Other Finished Material

Warehouse prices remain unchanged. The volume of business is satisfactory. Logging and lumber operators are working almost to full capacity. Boiler tubes have been moving in better volume while sheets continue in fair demand. Wholesale houses are carrying larger stocks than a year ago and the carryover will be greater at the end of the year, despite greater business, than it was 12 months back.

Old Materials

Business continues quiet, the market being dominated by buyers. Prices are unchanged from last week. Ample steel scrap is available, but dealers are not speculating, as there is no life to the market and no inducement to accumulate stocks. Buyers are not interested in cast iron scrap except at attractive prices. Foundries appear to be amply stocked for present requirements and the turnover is small. There is no export interest in scrap.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.20 to 0.23
Toluol	0.23 to 0.25
Solvent naphtha	0.23 to 0.25
Commercial xylol	0.27 to 0.29
Per Pound at Producers' Plants	
Phenol	$0.26
Naphthalene flake	0.07½
Naphthalene balls	0.08½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.80 to $2.85
Contract	
Pure benzol	$0.23
Toluol	0.25
Solvent naphtha	0.25
Commercial xylol	0.29
Per Pound at Producers' Plants	
Phenol	$0.26
Naphthalene flake	0.07½
Naphthalene balls	0.08½

*Spot distillates are subject to shading.

Easier Tendency

Noted in By-Products—Oil Distillate Situation Unchanged

New York, Nov. 27.—An easier tendency again is noted in sulphate of ammonia. While the domestic market is unchanged at $2.80 to $2.85 works, the export market is down five to 10 points, holding at $2.70 to $2.80. Dullness prevails in all quarters. The fertilizer manufacturers still are rounding out their yearly contracts, but in the main this business is small. In the export market the Japanese are figuring but have done little buying.

The situation in light oil distillates is unchanged. While the leading sellers are quoting firmly at 23 cents for pure benzol, it still is possible to shade this figure by at least 3 cents on relatively small lots. The market on pure benzol may be quoted, at 20 to 23 cents, works in tanks, and 28 cents in drums. Ninety per cent benzol is quoted at 19 to 21 cents in tanks and 26 cents in drums; toluol and solvent naptha, 23 to 25 cents in tanks and 30 cents in drums, and commercial xylol, 27 to 29 cents in tank car lots, and 34 cents in drums.

Trading in virtually all these descriptions is dull. A firmness in benzol on the part of the leading producers is attributed largely to the large quantity of production that is going into motor fuel and on which business the smaller sellers are not following so closely.

Dullness also prevails in napthalene, which is quoted unchanged at 7½ cents works for flakes and 8½ cents for balls.

Company Not Dissolved

Walton & Macke Nail Co., Kokomo, Ind., manufacturer of cement coated nails, has not filed articles of dissolution as reported in various trade papers other than IRON TRADE REVIEW, according to announcement from the Walton company. It reports that it leased its plant from Oct. 31, 1919 to Oct. 31, 1922 to a company which incorporated and operated under the name of the Walton & Macke Nail Co., Inc. This latter company now is being dissolved and the other company, a partnership, continues in business.

Japanese Buying

For Permanent Needs Probably Will Start in Spring

Washington, Nov. 27.—According to a statement by Luther Berker, chief, iron and steel division, department of commerce, the reconstruction program for Japan involves two distinct phases—the temporary and the permanent—the first of which was gotton underway within two days of the disaster. Because of the necessity for quick action in housing the homeless community during the coming winter the government through its reconstruction board authorized the purchase of such building materials that can readily be converted into cheap temporary building. Quite recently the Japanese ambassador at Washington consummated contracts with American manufacturers for the supply of nearly 100,000,000 board feet of Douglas fir and red cedar, 20,000 tons of black and galvanized sheets, and 3000 tons of wire nails. It is believed that additional orders for these materials will be placed later on in the United States inasmuch as the original inquiry put out called for double the present quantities. According to report an order for like materials was allotted to Great Britain and Canada, the former taking 5000 tons of galvanized sheets, and 1500 tons of wire nails, while Canada received the lumber contract amounting to 2,500,000 feet.

It is estimated that thus far a total of 180,000 to 200,000 tons of steel commodities, embracing sheets, tin plate, nails, wire rods and plain wire, rails, piping, bars and shapes have been contracted for by private Japanese merchants and the government in America, Canada and Europe. Of this tonnage it is believed that over 100,000 tons were placed in the United States. Probably a considerable part of these steel takings is represented in the normal trade cantered about Osaka, Kobe and elsewhere in the unaffected sections of Japan.

A special session of the Japanese diet is called Dec. 10 when the restoration board's plans will be presented and publicity given thereto according to a promise of the board. Unofficial estimates provided in the plan of restoration places Tokyo's allotment at 750,000,000 yen, and that of Yokohama at 350,000,000 yen for the next five years.

A permanent building code will be evolved which will determine the types and size of buildings, kinds and quality of materials, more economical and efficient methods of construction, and fire preventitive measures. For the larger buildings—government and municipal, office, hotel, bank and theater—use will be made of the steel frame and reinforced concrete types of construction, which stood up best against the unprecedented shocks of earthquakes and the fires which followed. The relative high costs of steel and concrete construction in Japan will prohibit the adoption of these types for the ordinary native house, and it is expected that the Japanese will again revert to the use of wood with perhaps certain changes with respect to design and construction. The utilization of specially designed wood-working machines to cut and fit each wooden member ready for erection, along the lines or unit or standardized construction, would materially cut down costs and speed up production.

Active buying of materials and engineering equipment under the permanent plan of reconstruction is expected to start early next year, and next spring should see unusual activity in the Japanese trading market.

Steelworks Payroll

Advanced 5 Per Cent in Month, Industry's Average Shows

Washington, Nov. 27.—A gain of 5 per cent in the payroll of iron and steel plants for one week in October, as compared with a similar week in September, is shown by the department of labor in a compilation of employment and payroll figures in selected industries for October. Similar comparisons for other branches of the industry show an increase of 3.3 per cent in the October payroll of structural iron work, 0.5 per cent for foundry and machine shop products, and a falling off of 0.2 per cent in the machine tool payrolls.

Reports from 186 establishments in the iron and steel industry, covering 242,171 employes, shows an average monthly payroll of $127 99 for October, as compared with an average of $126.58 in September for 178 establishments covering 216,842 employes.

Two industries considered by the department of labor show large increases in payroll totals. These were 11.4 per cent in automobiles and 14.6 per cent in women's clothing.

Comparing data from identical establishments for September and October, increases in employment are shown in 26 of the 51 industries considered, and increases in the amount paid in wages in 36 industries. Comparing one week in October with a similar week in September in the iron and steel industry, the bureau of labor statistics finds that the decrease in employment at 186 establishments was only 0.3 per cent in October.

Halmquist Machine Co., Bellingham, Wash., has increased its capital stock from $100,000 to $200,000.

Does Not Solicit

Business Since Bethlehem Took Over Others Says Buyer

Buffalo, Nov. 27.—The federal trade commission hearing on the Bethlehem Steel Corp. merger has heard three witnesses. An adjournment will be taken Wednesday until next week.

Earl W. Swartzman, purchasing agent for the Bay City Forge Co., Erie, Pa., on the stand Monday charged that the Bethlehem Steel Corp. since it had acquired the Midvale, Cambria and Lackawanna companies, had refused to solicit his business. Prior to the merger, he said, his chief sources of supply were the Lackawanna and Cambria companies. The testimony came out during the examination of Mr. Swartzman by Attorney Baldwin B. Dane for the government. He said he had received no solicitation for orders from the Lackawanna, Midvale or Cambria companies since the merger. Over the objection of Attorney W. W. Robinson for the Bethlehem company, Mr. Swartzman was finally allowed to answer Mr. Bane's question as to what effect the elimination of that solicitation might have.

"The Bethlehem has eliminated competition between the only mills that supply us with that quantity of steel," he replied. "The Bethlehem no longer solicits us and as a result our business is confined. We can no longer take the business we filled prior to that merger."

Mr. Swartzman stated he purchased about 2000 tons of billets and slabs annually from Lackawanna and Cambria prior to the merger. The billets were large and he said the Cambria and Lackawanna were the only companies that could supply him. Prior to the merger he said Bethlehem solicited him on a 30-day credit plan, that is, the purchaser was granted one-half of one per cent off if he paid the bill in 10 days or he could pay the net bill in 30 days without discount.

Harmon J. Hershey, president of the Genessee Bridge Construction Co., previously testified that prices had fluctuated more this year than any time since the war, that during the war purchasers bought secondhand rails because of insufficient output and the practice of many fabricators now was to deal with a limited number of steel mills.

W. L. Heughes of the Heughes Construction Corp., Rochester, said that prior to the merger, all the companies solicited his business but that since then they no longer competed for it.

Ruhr Agreement Limits Trade

Iron and Steel Exports from District Restricted to Monthly Tonnage of 1922—Provision for Resumption of Operations Finally Signed—American Users Buy 60,000 Tons of Russian Manganese Ore

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Nov. 27.—The agreement between the Ruhr manufacturers and the French authorities providing for a general resumption of operations in that region has finally been signed. It limits the iron and steel exports from the Ruhr to an amount equal to the monthly tonnage of 1922.

British boilermakers have accepted the employers' terms of settlement after a seven months strike. This has strengthened the market for plates and shapes. Five additional blast furnace stacks have been blown in. Keen competition from Belgium is worrying the British producers who recently formed price fixing associations.

The Societe Anonyme des Hauts Fourneaux et Foundries de Pont-a-Mousson, France, and the Compagnie Generale des Conduites d'Eau, Liege, Belgium, hav divided an order for 12,000 tons of cast iron pipe for Porto Rico. The Societe Metallurgique de Senelle Maubeuge, Longwy, France, has taken an order for 6000 tons of rails for Argentina.

American consumers are reported to have purchased 60,000 tons of unwashed Russian manganese ore at 38 cents per unit c.i.f.

Changes in prices in the British market this week bring the following products to the levels as quoted: Sheet bars and billets, £7 17s 6d ($34.53); steel bars for home use, £10 5s ($44.95); steel bars for export, £9 17s 6d ($43.30); English and Scotch plates and beams for home use, £9 10s ($41.66); tin plate, £1 3s 6d ($5.15); Middlesbrough basic iron, £4 15s ($20.83); Staffordshire No. 3 foundry iron, £4 13s 6d ($20.50).

Sterling exchange is figured on a basis of $4.385.

Less Foreign Steel Aids British Iron Market

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Nov. 16.—The iron and steel market has several hopeful features, but it is significant that improvement so far has brought no addition to operating furnaces. With the exception of the north-east district prices are unchanged. No. 3 Cleveland continues at £5 ($21.70) and east coast hematite the same. Improved demand has enabled Cleveland furnace owners to reduce stocks, and on the west coast tonnages are much smaller. A rise in west coast hematite brings that district into line. Makers of pig iron need higher prices, in view of high prices for coke. The Middlesbrough furnace owner still has to pay about £2 ($8.68) for coke. The Barrow-in-Furness pig iron maker has obtained a slight concession in coke.

The improvement in the steel trade encourages hope that more raw material may be called for soon. Steel values have hardened, and some advances have been registered. It is no longer possible to buy soft billets at £7 15s ($33.63), the minimum being £8 6d ($34.80) to £8 5s ($35.80). South Wales is the usual source of supply for the Birmingham and Staffordshire area. But Welsh mills are full of work, having taken substantial billet orders, and finding a market close at hand in makers of sheets and tin plates. Rail mills are busier than they have been for some time. The London & North Eastern railway is about to place orders for wagons to the value of 2½ million pounds, and the admiralty program for new warships is gradually taking shape.

The steel output is increasing. Railway

Sterling—$4.34

orders include 10,000 tons of rails to a Midland firm. Rail mills have become busy, including some at Barrow which have had some months idleness. All steel prices have advanced. Small steel bars are now quoted £10 10s ($45.57) to £11 ($47.74) a rise of 15s ($3.25) to £1 ($4.34) per ton. Ship plates could be bought lately at £9 15s ($42.31) but are now £10 2s 6d ($43.94) as a minimum, and angles and sections are correspondingly dearer. Much semifinished steel is being bought, 1000-ton orders being common. The lowest price is £8 2s 6d ($35.26) but £8 5s ($35.80) is more general. Welsh makers are now well filled with orders in their own locality, and will not sell here under £8 10s ($36.89).

Some merchants are still doing business with Belgium in shipments from Antwerp, one exporter stating he had bought at £8 ($34.72) f.o.b. It is possible to buy small bars here at £9 2s 6d ($39.60) delivered. Barmakers have been bold enough to put up their prices, small bars now being quoted £10 10s ($45.57) to £11 ($47.74), a rise of 15s ($3.25) to £1 ($4.34) per ton. Steel skelp has been put up to £10 15s ($46.65) and iron skelp to £12 15s ($55.33).

Continental competition has practically disappeared. As a rule Belgian firms do not name prices or cultivate business. Some merchants claim to be getting an isolated offer of billets at £7 10s ($33.30) delivered. This should be an attractive figure, but the offers do not seem to materialize into actual business. Advices from Belgium state mills are booked well into January. Whatever may happen German competition is not now a menace, and British steelmakers have practical control over their own market. Some Belgian joists are on offer at prices below the English figure, but the difference is attractive only to buyers on the coast, able to avoid rail charges. Thin plates, ⅜ inch thick, offer a slight advantage owing to the lower Belgian extras charged on thin sizes.

English plates which have for some time been nominally £10 ($43.40) could be bought lately at £9 15s ($42.31) but cannot now be shaded.

The Staffordshire iron trade is showing improvement, makers adhering to the £12 ($52.08) figure for medium iron. For brands of repute it has been possible for the makers to add 5s ($1.08) to 7s 6d ($1.62) on recent quotations.

Makers of nut and bolt iron at £10 12s 6d ($46.23) have to compete with Belgian No. 3 now obtainable at £8 15s ($37.97) delivered. The gap would seem to encourage buying of Belgian material. But Darlaston makers of nuts and bolts press for still cheaper Belgian iron. The improvement has hardly affected the Staffordshire works, but a hopeful circumstance is that foreign buying has been resumed, and among the recent contracts are repeat orders from Russia.

Welsh makers of tinplates evidently have not been impressed by criticisms of their stabilization arrangements, since the committee meeting this week has renewed for twelve months the system of price fixing. For the present the

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange, November 26

British Market

Corrected to Date by Cable
Home Market Prices. Gross Tons at Works or Furnace

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	34.53	7 17 6
Sheet bars	34.53	7 17 6
Wire rods	48.24	11 0 0
FINISHED STEEL		
Steel bars, England, ⅜ to 3-inch	44.95	10 5 0
Steel bars, England, ⅜ to 3-inch, for export	43.30	9 17 6
Plates, ship, bridge and tank, England	41.66	9 10 0
Plates, ship, bridge and tank, England, for export	39.47	9 0 0
Plates, ship, bridge and tank, Scotland	41.66	9 10 0
Plates, ship, bridge and tank, Scotland, for export	39.47	9 0 0
Beams, England	41.66	9 10 0
Beams, England, for export	39.47	9 0 0
Beams, Scotland	41.66	9 10 0
Beams, Scotland, for export	39.47	9 0 0
Sheets, black, 24 gage	57.01	13 0 0
Sheets, black, 24 gage, for export	55.91	12 15 0
Sheets, galvanized, 24 gage	84.41	19 5 0
Rails, 60 pounds and over	39.47	9 0 0
Rails, 60 pounds and over, for export	37.27	8 10 0
Tin plate, base box, 108 pounds	5.15	1 3 6
Steel hoops	50.43	11 10 0
Steel hoops, for export	48.24	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	22.47	5 2 6
Hematite, West Coast, Mixed Numbers	23.57	5 7 6
Basic Middlesbrough	20.83	4 15 0
No. 3 Foundry, Middlesbrough	21.93	5 0 0
No. 3 Foundry, Derby, Leicester, Nottingham	20.28	4 12 6
No. 3 Foundry, Northamptonshire	20.28	4 12 6
No. 3 Foundry, Staffordshire	20.50	4 13 6
No. 3 Foundry, Scotch	21.93	5 0 0
Ferromanganese, 76 to 80 per cent	74.55	17 0 0
COKE		
Yorkshire furnace	5.26	1 4 0
Yorkshire furnace, for export	8.77	2 0 0
Welsh foundry	7.13	1 12 6
Welsh foundry, for export	8.77	2 0 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Pounds per metric ton) (2205 lbs.)
PIG IRON		
Hematite	25.43*	5 16 0
Foundry, No. 3	25.43	5 16 0
Stahleisen, Siegen	27.41	6 5 0
Foundry, No. 1	25.43	5 16 0
Luxemburg Foundry, No. 3		Nominal
COKE		
Lower Silesian foundry	9.08	2 1 5
Lower Silesian, furnace	9.08	2 1 5
SEMIFINISHED STEEL		
Billets	35.32	8 1 1
Sheet bars	36.65	8 7 2
Wire rods	43.85	10 0 0
FINISHED STEEL		
Standard rails	42.10	9 12 0
Merchant bars	40.56	9 5 0
Structural shapes	41.66	9 10 0
Ship plates	40.12	9 3 0
Medium plates, 3 to 5 millimeters	44.95	10 5 0
Sheets, 1 to 3 millimeters	48.24	11 0 0
Tin plate	133.74	30 10 0
Plain wire	69.61	15 17 6
Bands and strips	52.20	11 18 1

All prices are f.o.b. furnace or mill.
*German prices now are quoted in pounds, sterling.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs)
PIG IRON		
Hematite, Lorraine	25.13	460
Basic bessemer, Lorraine	22.12	405
Foundry, Longwy, No. 3, sand-cast	21.58	395
Foundry, Longwy, No. 3, chill-cast	22.12	405
Ferromanganese, 76 to 80 per cent	84.67	1,550
COKE		
French foundry	8.47	155
French furnace	7.37	135
German furnace, f.o.b. frontier*	11.58	212
German furnace, f.o.b. frontier**	12.29	225
SEMIFINISHED STEEL		
Blooms	26.49	485
Billets	28.41	520
Sheet bars	28.95	530
FINISHED STEEL		
Standard rails	32.78	600
Merchant bars	32.78	600
Angles	31.68	580
Normal beams and profiles	31.68	580
Plates, ship and tank, 10 millimeters and thicker	35.23	645
Plates, bridge and tank, 5 to 10 millimeters	35.78	655
Sheets, black, 3 millimeters	37.96	695
Sheets, blue annealed, 2 millimeters	45.61	835
Shafting, cold-drawn, 40 to 60 millimeters	62.82	1,150
Bars, 2 per cent nickel steel	98.33	1,800

All prices are f.o.b. furnace or works.
*Up to 60 per cent of normal requirements.
**Over 60 per cent of normal requirements.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	19.44	415
Basic open-hearth, Belgian	20.61	440
Gray forge, Belgian	12.65	270
Foundry, No. 3, Belgian	20.38	435
Foundry, No. 3, Luxemburg	20.61	440
Foundry, No. 3, Lorraine	20.38	435
SEMIFINISHED STEEL		
Blooms	25.30	540
Billets	26.70	570
Sheet bars	27.64	590
Wire rods	42.17	900
FINISHED STEEL		
Standard rails	36.31	775
Merchant bars	32.80	700
Normal beams and profiles	31.16	665
Plates, 5 millimeters and thicker	34.90	745
Sheets, black, 3 millimeters	37.25	795
Sheets, galvanized, 1 millimeter	89.02	1,900
Plain wire	57.39	1,225
Galvanized wire	71.45	1,525
Wire nails	60.91	1,300

All prices are f.o.b. furnace or works.

price per box contines £1 3s 1½d ($5.13). Similarly tin plate bars are continued at £9 2s 6d ($40.51) per ton, less 7s 6d ($1.66) rebate. One advantage of this general regulation of the selling arangements is that consumers are placing orders with confidence, contracts having been made as far forward as March. Mills are well booked, as a rule, into February.

One result of the disproportionate demand for thin gages of sheets, chiefly on Japanese account, has been an increase in the extras for 30 gage material of about £1 ($4.34) per ton, a typical quotation being £26 ($112.84) for 30 gage sheets. Bookings of galvanized sheets has been somewhat quieter lately, but prices are firm at £19 ($82.46) to £19 5s ($83.53) for 24 gage. Buyers wanting early delivery pay a premium. The Glasgow and Staffordshire areas are getting a fair share of the sheet business now presenting itself.

Steel scrap shows marked improvement in prices. Users sought to squeeze quotations and some find themsleves without material and obliged to buy on sellers' terms. Some sales have been made at £4 10s ($19.53) to buyers who a few weeks ago could have bought at £3 17s 6d ($16.80). Much material is being held for further advances, and increasing activity at steelworks has reduced surplus material.

British Exports in Further Gain Over 1922

Birmingham, Eng., Nov. 13.—British board of trade returns for October show exports of iron and steel products, including scrap, were 401,475 tons compared with 344,358 tons in September and 354,595 tons in October 1922. Imports for Oct. were 117,372 tons, compared with 127,893 tons in September and 100,252 tons in October 1922. Exports of pig iron made some recovery but there is a further shrinkage in ferroalloys. Pig iron exports were 11,661 tons, compared with 14,282 tons in September. Steel bar exports were 41,072 tons compared with 27,117 tons in September and 25,657 tons in October, 1922. Hoops and strips have increased exports from 5617 tons in September to 7894 tons in October, while plates and sheets show a substantial gain in tonnage exported. Galvanized sheets increased from 44,056 tons in September to 57,835 tons in October. A remarkable expansion is found in tin plate, which moved from 38,725 tons in September to 51,398 tons in October. Wrought tube exports increased from 9991 tons to 14,803 tons in the same months. Decrease in ferromanganese trade with

America is shown by 5495 tons being exported there in October, compared with 9160 tons in September.

There were no imports from America but 15,432 tons of billets were bought from Belgium, against 9175 tons in October 1922, 1035 tons from Germany compared with 3113 in October 1922. Total imports of billets were 31,635 tons, compared with 37,673 tons in September and 25,408 tons in October last year. Imports of steel bars were 14,024 tons, compared with 13,424 tons in September and 6124 tons in October 1922. Iron bar imports decreased slightly at 12,144 tons. Girder and beam imports totaled 7152 tons, compared with 5609 tons in September.

French Prices Hold Downward Course

European Staff Special

Office of IRON TRADE REVIEW,
23 Rue de la Bienfaisance

PARIS, Nov. 13.—The outlook for early settlement of the reparations question is more encouraging, and the downward movement of iron and steel pirces continues unchecked. Producers are out for business and making price concessions, but have not succeeded in arousing interest. The fact that furnaces and mills are competing after having been out of the market for several weeks has caused buyers to conclude that prices will go much lower before the bottom is reached. The consumers' position has become so strong that practically all transactions of importance are at fixed offers manufacturers may accept or refuse.

The available tonnage of seized products in the Ruhr is dwindling and in view of agreements with the Otto-Wolf group and more recently with Krupp, this material is partly being disposed of in favor of the original owners. It develops it would have been practically impossible to sell this material against precise specifications or accurate analysis, which tended to make disposal uncertain.

Despite the fact that coke supplies are becoming more abundant, French metallurgists are anticipating a price raise in December on account of wage increases recently granted German labor. It is being rumored that coke will be advanced from 212 francs ($11.66) to 220 francs ($12.10) on Dec. 1. This price is subject to a rebate of 30 francs ($1.65) on any coke used in manufacturing iron and steel for export.

Pig iron production continues to increase and closely approaches December, 1922, which represents the last month of normal output prior to Ruhr occupation. The price of Lorraine No. 3 foundry (2.50 to 3.00 silicon) has moved from 430 francs ($25.80) to 410 francs ($24.60) within the last ten days. Hematite pig, foundry quality, silicon 2.50 per cent, phosphorus 10 per cent is quoted at 460 francs ($27.60) f.o.b. furnace, Moselle district. English hematite is no longer competitive in the French market.

Steel production in France during September was slightly in excess of the average during 1922. Basic bessemer blooms have been sold as low as 490 francs ($29.40) per ton and billets have moved down to 520 francs ($31.20). Several large mills in the North and East of France have completed reconstruction and are seeking to establish contact with former clients.

Makers of finished steel products are offering prompt delivery. Merchant bars are quoted at 580 francs ($31.90) and large jobbers have placed contracts covering mixed specifications at an average price of 580 francs ($31.90) per metric ton f.o.b. mill. Belgian mills are offering bars for export at 700 Belgian francs

Franc—$0.06

(35.00). Plate makers are also encountering keen competition. Plates 5 millimeters thick are being quoted at 690 francs ($37.45) by eastern and Meurthe-et-Moselle mills. Prices are being shaded on wire products; a concern in the Haute-Marne offers No. 21 gage wire at 110 francs ($60.50) per ton and No. 20 flat head nails at 1150 francs ($63.25) per metric ton, f.o.b. cars mill.

Railroads are coming into the market with orders for rolling equipment and materials for repair work. The program of the Compagnie du Nord covering construction and repair work, involves the expenditure of 175 million francs. The Compaignie de 'l Est is inquiring for 2000 freight cars. The Societe des Transports en commun de la Region Parisienne, which operates the Paris tramways and autobuses has split an order for 223 electric cars among several large French manufacturers. An inquiry for 16,000 tons of rails for the Chilean railways is circulating in the French market.

An order covering 8000 tons for Holland has been captured by the Belgian firm of *La Providence*. De Wendel is awaiting the confirmation of an order for 20,000 tons of rail for Morocco. This order has been pending for several months.

French Production Holds

Paris, Nov. 15.—Furnaces blowing in France Oct. 1, were 111, compared with 109 Sept. 1, 106 July 1, 77 April 1, and 116 Jan. 1. Stacks in working order Oct. 1 were 60, and 48 were in the course of construction or being repaired. Of the active furnaces, 76 were blowing in the East and Lorraine. During September, three furnaces were blown in, one in the East and two in Alsace-Lorraine and one stack was banked in the south-eastern district. Only five furnaces remain banked or blown out since Jan. 1 owing to coke shortage.

Pig iron production during September was 481,874 tons, or 4376 tons less than August. Basic bessemer pig iron production was 332,703 tons; foundry 97,165 tons; refining 30,832 tons; acid bessemer 2282 tons; special grades 18,892 tons. Lorraine's contribution was 173,018 tons, compared with 175,000 during August.

The September output of steel ingots and castings was 446,480 tons, 5884 tons less than August. Ingots were 435,589 tons and steel castings 10,891 tons. In Lorraine, total steel production was 149,568 tons against 149,000 tons in August.

During the first nine month of 1923, imports of pig iron in France were 45,360 tons valued at 22,488,000 francs. Steel imports were 393,277 tons worth 336,730,000 francs. During the same period, exports of pig iron were 436,127 tons valued at 213,702,000 francs and steel exports 1,311,500 tons worth 933,043,000 francs.

Production by months is as follows:

1923	Pig iron	Steel ingots and castings
January	486,210	407,731
February	305,526	289,787
March	316,146	315,807
April	350,485	354,791
May	393,428	399,249
June	447,013	427,400
July	436,420	399,528
August	486,250	452,364
September	481,874	446,480

British Production Is Up

London, Nov. 17.—Production of pig iron in Great Britain in October, according to official figures of the National Federation of Iron and Steel Manufacturers was 592,600 gross tons. There were 188 furnaces in blast at the end of October compared with 190 at the end of September, 196 at the end of August, 206 at the end of July, 183 on Jan. 31, 169 at the end of 1922 and 77 at the end of 1921. There were 35 fewer furnaces in blast at the end of October than in May, 1923. October production included 171,200 tons of hematite, 198,600 tons of basic, 164,900 tons of foundry, and 23,300 tons of forge grades.

Production of steel ingots and castings in October was 702,100 tons. This is an increase of 7000 tons over September and is 118,900 tons less than May, 1923, which was the highest attained since September, 1920.

Details of the pig iron and steel output from January, 1921, to September, 1923, are shown in the following table:

PIG IRON

	1923	1922	1921
Jan.	567,900	288,000	642,100
Feb.	543,400	300,100	463,600
March	633,600	389,800	386,000
April	652,200	394,300	60,300
May	714,200	407,900	13,600
June	692,900	369,200	800
July	655,100	399,100	10,200
Aug.	599,800	411,700	94,200
Sept.	558,600	430,300	158,300
Oct.	592,600	486,500	235,600
Nov.		493,900	271,800
Dec.		533,700	275,000
		4,899,500	2,611,400

STEEL INGOTS AND CASTINGS

Jan.	624,300	327,500	493,400
Feb.	707,100	418,800	483,500
March	802,500	549,400	359,100
April	749,400	404,200	70,600
May	821,000	462,300	5,700
June	767,700	400,200	2,700
July	624,300	473,100	117,200
Aug.	567,500	528,400	434,100
Sept.	695,100	555,900	429,300
Oct.	702,100	665,200	405,400
Nov.		600,800	443,800
Dec.		546,100	381,000
		5,831,900	3,625,800

Imports and Exports Drop Again

Shipments of Iron and Steel Products and Ores from the United States of 154,887 Tons and Receipts of 29,556 Tons in October Is Lowest Monthly Volume of Trade Since August 1922

OCTOBER trade of the United States with foreign countries in iron and steel products and metallic ores was the smallest in volume for any month since August, 1922, exports last month totaling but 154,887 tons and imports 29,556 tons, according to the United States department of commerce. Both figures are lower than totals of September, when shipments were 175,429 tons and receipts amounted to 36,562 tons. The swing of foreign trade balance to the favor of the United States in the past year is evidenced in the comparison of figures in October 1923 and 1922. Imports in that month last year amounted to 174,764 tons with exports of but 138,887 tons while in October this year shipments increased to 154,887 and receipts dropped to 29,556 tons.

IMPORTS AND EXPORTS

Gross Tons

	1923		1922	
	Imports	Exports	Imports	Exports
Jan.	119,955	135,046	13,404	165,962
Feb.	67,682	136,853	11,535	133,333
March	106,050	168,176	12,774	206,474
April	77,794	183,905	18,720	197,562
May	75,840	195,535	23,098	229,616
June	67,968	176,403	39,154	216,298
July	53,451	170,259	56,425	161,204
Aug.	45,612	163,010	49,054	144,264
Sept.	36,562	175,429	76,378	128,370
Oct.	29,556	154,887	174,764	138,887
Nov.	.....	.....	152,250	124,004
Dec.	.....	.....	96,358	154,087
Total	680,351	1,664,996	723,914	2,000,061

Year	Imports	Exports
1921	135,825	2,150,276
1920	421,274	4,934,087
1919	322,264	4,397,295
1918	169,110	5,338,019
1917	330,201	6,465,053
1916	328,965	6,110,732
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635

A general decline from September totals was registered in exports of most materials, including scrap, iron bars, alloy steel bars, wire rods, black steel sheets, cold rolled strip, structural shapes, rails and joints, galvanized pipe, wire and wire products. Outstanding in the decrease in tonnages shipped was iron and steel scrap, October shipments totaling 5186 tons as compared with 9681 tons in September, and rails under 50 pounds, shipments of which totaled but 19,350 tons in the month just passed in comparison to 31,072 tons for September. The drop in these two products more than offset the few slight increases, causing the total exports to decline.

IRON AND STEEL EXPORTS

Gross Tons

	—October—		Ten months ended October	
	1923	1922	1923	1922
Pig iron	3,294	1,553	26,370	24,320
Iron and steel scrap	5,186	4,510	54,400	60,425
Semifinished	10,989	8,288	98,957	90,610
Iron bars	512		11,826	
Steel bars	12,225	9,660	135,066	155,160
Alloy steel bars	96	291	2,037	4,700
Wire rods	2,454	1,180	26,381	37,696
Boiler plate	3,492	88	10,979	11,494
Other plates	6,530	4,215	91,646	69,792
Galvanized sheets	8,030	7,519	99,584	96,220
Black sheets, steel	7,859	6,255	85,275	204,147
Black sheets, iron	1,385	452	12,738	9,971
Cold rolled strips	712	426	10,237	4,424
Hoops, bands and scroll	2,782	2,544	23,115	23,504
Tin and terne plate	11,784	6,325	91,227	66,230
Structural shapes, plain	5,871	6,566	106,881	48,807
Structural shapes, fabricated	3,102	1,609	28,527	17,005
Ship and tank plates, punched and shaped	251	174	2,628	2,058
Metal lath	233	**	1,133	**
Other structural forms	2,912	6,376	34,879	64,614
Rails over 50 pounds	19,350	17,070	197,825	216,701
Rails under 50 pounds	1,772	3,132	21,119	23,960
Rail joints, etc.	1,777	2,487	18,953	17,631
Switches, frogs, etc.	534	488	4,443	4,810
Railr'd spikes	523	598	7,383	6,479
Railr'd bolts, nuts, etc.	212	173	2,281	1,802
Boiler tubes	1,366	904	14,282	9,780
Casing and oil line pipe	3,459	6,422	46,469	42,046
Welded black pipe	6,716	5,192	66,114	63,003
Welded galvanized pipe	2,290	2,664	24,224	26,767
Malleable iron pipe fittings	669	817	6,802	6,937
Cast iron pipe	1,460	1,839	12,888	15,019
Cast iron pipe fittings	1,338	790	10,793	7,127
Plain wire	2,282	2,985	31,409	30,480
Galvanized wire	3,771	5,908	44,825	70,005
Barbed wire	3,840	6,530	58,696	60,857
Woven wire fencing	215	181	3,558	2,366
Wire cloth and screening	143	128	1,725	1,274
Wire rope	364	512	5,421	3,960
Insulated wire and cable	102	80	1,259	749
Other wire	1,314	1,047	12,830	13,387
Cut nails	207	138	2,095	3,160
Wire nails	3,370	2,130	32,550	48,966
Horseshoe nails	51	84	960	630
Other nails	548	309	4,500	3,386
Bolts, nuts, rivets, etc.	1,826	1,905	16,059	15,319
Horseshoes	71	72	773	804
Other iron and steel	4,523	6,240	56,305	47,135
Ferro and spiegeleisen	1,019	5	4,284	1,059
Ferrosilicon	76	78	735	444
Total	154,887	138,939	1,664,996	1,737,220

*Includes ingots, blooms, billets, slabs and skelp, sheet and tin plate bars.

**Due to reclassification, comparisons are not possible.

Pig iron shipments, together with semifinished, steel bars, tin and terne plate, welded black pipe, ferromanganese and spiegeleisen, and ferrosilicon were among those which increased in October. Pig iron exports in October totaled 3294 tons as compared with 2148 tons in September. Ferromanganese and spiegeleisen took the greatest jump proportionately with 1019 tons shipped in October and but 45 tons in September.

CASTINGS AND FORGINGS EXPORTS

Gross Tons

	—October—		Ten months ended October	
	1923	1922	1923	1922
Iron castings	993	706	8,647	8,246
Steel castings	304	192	4,184	1,737
Car wheels and axles	2,335	1,284	17,650	13,915
Iron and steel forgings	168	115	2,623	2,009
Total	3,800	2,297	33,104	25,907

FERROALLOY EXPORTS

Gross Tons

	—October—		Ten months ended October	
	1923	1922	1923	1922
Ferrosilicon	76	78	735	444
Ferromanganese and spiegeleisen	1,019	5	4,284	1,059
Tungsten, manganese and other ores	103	....	807	....
Ferrotungsten, tungsten metal and wire	....	....	1	....
Ferrovanadium	....	....	12	20
Other ferroalloys	49	50	146	560

Pig iron imports in October totaling 9349 tons increased over September when the aggregate was 8353 tons. The receipts of that material for the 10 months ended Oct. 31, 1923 totaled 346,166 tons as compared with 229,950 tons for the like period of 1922. Receipts of iron and steel scrap dropped from 10,608 tons in September to 3046 in October, and was largely responsible for the smaller total of all imports for the latter month. In the ten months of 1923, 154,416 tons of scrap has been imported into the United States as compared with 88,792 tons in the same months of last year. Ferromanganese and ferrosilicon imports continue at an even pace, 8802 tons of the former and 571 tons of the latter being imported in October as compared with 8756 tons and 989 tons respectively in the preceding month.

Imports of pig iron in October, totaling 9349 tons, came mainly from Eng

land and the maritime provinces of Canada, the former country sending 4400 tons and the provinces, 1603 tons. France, including Luxemburg, shipped 1118 tons of that material to this country, and Scotland sent an even 1000 tons. Belgium with 269 tons, Quebec and Ontario with 955 tons and China with 4 tons comprised the remainder of the countries which shipped pig iron to the United States in October.

Iron ore imports totaled 215,031 tons

PIG IRON IMPORTS
Gross Tons

From:	Oct., 1923
France, including Luxemburg	1,118
Belgium	269
England	4,400
Scotland	1,000
Maritime provinces, Nova Scotia, New Brunswick and Prince Edward Island	1,603
Quebec-Ontario	955
China	4
Total	9,349

IRON ORE IMPORTS
Gross Tons

From:	—October— 1923	1922	Ten months ended October 1923	1922
Spain	2,379	.....	214,890	39,936
Sweden	30,243	40,229	704,867	260,037
Canada	566	601	24,525	2,355
Cuba	45,203	44,000	647,379	276,489
Other countries	136,640	38,597	941,925	228,977
Total	215,031	123,427	2,533,586	807,794

in October, a drop of 46,578 tons from the total of 261,609 tons in September, but considerably higher than October, 1922 when receipts amounted to but 123,427 tons. Of the imports for October, 1923, 30,243 tons came from Sweden, 45,203 tons from Cuba and 2379 tons from Spain. Iron ore imports for the 10 months ended this last month amounted to 2,533,586 tons as compared to 807,794 tons in the like period ending Oct. 31, 1922.

Manganese ore imports in October dropped to less than half of what they

IRON AND STEEL IMPORTS
Gross Tons

	—October— 1923	1922	Ten months ended October 1923	1922
Pig iron	9,349	120,779	346,166	229,950
Ferromanganese	8,802	11,229	82,452	83,240
Ferrosilicon	571	251	10,478	13,025
Scrap	3,046	28,677	154,416	88,792
Bar iron	348	526	7,124	4,806
Steel ingots, bars, etc.	2,477	7,736	17,389	23,952
Struct'l shapes	655	1,433	8,523	3,321
Rails	2,881	2,394	25,409	24,260
Boiler and other plates	89	674	1,652	674
Sheets and saw plates	289	90	2,257	90
Tin plate	47	42	9,739	2,302
Wire rods	295	27	3,318	1,329
Total	28,549	173,858	668,934	475,741

OTHER IMPORTS
Gross Tons

Tubular products	406	305	3,695	306
Round iron and steel wire	219	282	3,221	282
Castings and forgings	131	160	2,308	160
Nails and screws	81	109	1,006	109
Nuts, bolts, rivets, etc.	22	31	176	31
Flat wire and strip steel	148	19	1,013	19
Grand total	29,556	174,764	680,351	476,648

**Due to changes in classifications, comparisons are not possible.

were in September, with 16,842 tons and 35,175 tons respectively being received. Of the October total, 7830 tons arrived from British West Africa, this country not having sent any in the previous month. Turkey-in-Europe sent 5448 tons in October as compared to 18,593 tons in September and British India shipped 2660 tons as compared to 4570 tons in September. Ferromanganese shipments received totaled 8786 tons from England and 16 tons from France including Luxemburg.

Exports of castings and forgings in October varied little from those of the preceding month. Iron castings in October totaled 993 tons and in September 853 tons, steel castings in October 304 tons and September 576 tons; car wheels and axles, 2335 tons in October and 2111 tons in September, and iron and steel forgings 168 in October and 336 in September.

Ferroalloy exports increased more proportionately than any other classification of iron and steel and ores in the September-October period. Ferrosilicon increased from 2 tons in the former month to 76 tons in the latter, ferromanganese and spiegeleisen increased from 45 to 1019 tons, tugnsten, manganese and other ores from 9 to 103 tons and other ferro-

FERROMANGANESE AND MANGANESE ORE IMPORTS
Gross Tons

Manganese ore from:	Oct., 1923
Turkey-in-Europe	5,448
Brazil	904
British India	2,660
British West Africa	7,830
Total	16,842
Ferromanganese from:	
France, including Luxemburg	16
England	8,786
Total	8,802

IMPORTS OF VARIOUS ORES AND FERROALLOYS
Gross Tons

	—October— 1923	1922	Ten months ended October 1923	1922
Ferromanganese	8,802	11,229	82,452	83,240
Ferrosilicon	571	251	10,478	13,025
Manganese ore	16,842	18,642	170,193	348,452
Tungsten bearing ore	...	10	.....	1,665
Nickel ore	496	247	5,765	395
Total	26,711	30,379	268,888	446,777

alloys from 6 to 49 tons. Ferrovanadium dropped from one ton to approximately one-half ton.

The 160 union striking molders who have been out of the Biddeford, Me., division of the Saco-Lowell shops, Boston, nearly a year, have been enjoined by the supreme court of Maine from interfering with other molders at the plant. A number of the employes have been assaulted.

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Pig Iron Finally Turns

RECENT heavy purchases of pig iron amounting probably in excess of 1,000,000 tons to all appearances have brought to an end the long period of price decline and of stagnant conditions of the market extending over a number of months. The last previous buying movement comparable to the present one came almost exactly one year ago. In December, 1922, was reached the low point of a decline started the previous September. This buying activity extended through four months and reached its culmination in March of this year. After remaining practically stationary through the following month, prices started downward in May and have crumbled steadily up to the present time representing a total loss of $9 to $10 a ton.

If more than 1,000,000 tons of iron has been put under contract by the current buying it would be necessary to go back to the early months of 1920 to find a parallel for so large a volume of transactions. Based upon these latter bookings, pig iron prices reached their highest level in modern history, excepting only the uncontrolled war period of 1917, which immediately preceded inauguration of government price regulation of iron and steel in September of that year.

It is curious to note that while pig iron has fallen $9 to $10 per ton since last May steel prices have yielded very little. A record of representative quotations on seven leading steel products shows only one, sheets, has declined in that period. All the other six products while subject to some concessions have not been dislodged from their stable price basis that had prevailed seven months previously.

This decided disparity in the behavior of pig iron and steel may be accounted for by several reasons. The large concentration of steel capacity in a comparatively few companies without question tends to exert a stabilizing influence on the market. In pig iron there is no comparable situation, local conditions have more weight and divergent interests are more numerous. Once brought into blast by higher prices, increased producing capacity in pig iron does not readily retire since this operation is a much more extensive and costly one than the putting on or off of more steelmaking units. Furthermore, pig iron producers are accustomed to pile considerable product when occasion demands, in order to keep things running. An excess of production consequently is something which the pig iron market has difficulty in avoiding. This is what it has been facing for some months past as evidenced by the increase of iron piled on furnace banks, despite the sharp curtailment of merchant iron production.

Immigration Conference Important

A NATIONAL conference on immigration such as sponsored by the National Industrial Conference board and announced for Dec. 13 and 14 in New York City should serve as a timely expression of public opinion on the subject for the guidance of congress. The per centum limit act of May, 1921, and subsequent amendments, regulating the inflow of immigrants, expires on June 30, 1924, and the question as to what shall be done with the act after that date will receive the attention of congress in December. The law has been in operation long enough to determine whether it has been of advantage to the country. Much has been said for and against it, and for and against proposed amendments.

The board, representing the principal industries of the United States, has invited various organizations and individuals, reflecting all shades of public opinion, to attend the conference, and state what in their estimation should be the future policy of the government. It is not planned to have the conference go on record as favoring a specific program, but to register various views and present a composite which the national lawmakers may consider. It is believed that something of a definite character will be the result.

The net gain in unskilled laborers in this country during the fiscal year ended June 30 was 86,400, as

compared with 350,000 during some of the prewar years. The excess of skilled workers, over departures. in the last fiscal year was 97,932, giving a total of only 184,332 for the greatly expanded needs of industrial operations. About 10 per cent of the immigrants who have arrived recently are classed as laborers.

The program for discussion at the conference outlines a score or more of proposals that have been suggested for incorporation in the new law. The sponsors

Action on Test Bar Needed

FROM a practical standpoint, one of the most important steps taken at the international foundrymen's congress in Paris in September is embodied in the resolutions on testing cast iron which were referred to in the Sept. 20 issue of IRON TRADE REVIEW. These resolutions, which were passed unanimously, point out the necessity for international agreement on standard methods of testing and suggest a plan for bringing the proposed international specifications actually into being. Up to the present nothing has been done except to put forward an idea, which foundrymen all over the world have agreed should be given practical effect. What is wanted now is action.

The resolutions adopted at Paris propose the formation of an international committee, consisting of delegates from the existing committees on tests of the several national associations. This international committee is to take up first a method of testing the quality of iron going into castings, and secondly the quality of the castings themselves. Nearly everyone is agreed that these objects are desirable, but unless the recommendations of the Paris congress are definitely acted on the whole project is in danger of falling to the ground. At present the international committee does not even exist officially. Some one association has got to start the ball rolling. This task should be undertaken by the American Foundrymen's association.

If the work is to succeed, several definite steps are necessary. First the members of the international committee must be officially appointed. They should be men of broad experience, who can give some time and perhaps money to the work, and they should be given authority to act on behalf of their respective associations. This committee must next appoint a chairman who will direct and a secretary who will work. Following this each association could be asked to submit its recommendations to the secretary, who should embody the whole in a monograph for general circulation. The proposals, which will show wide divergence, can then be discussed by mail. After, but not until this preliminary work is done, the committee should hold a meeting, preferably before the end of 1924, at which time the differences can be discussed verbally and an international standard method of testing cast iron adopted by a majority vote. Then it should be the final duty of the members of the committee to sink their own ideas and induce their several associations to ratify the standard method. Only when it is ratified by say three of the associations concerned can the job be considered finished.

This is no small program, but with effort and good will it can be done. The task should be carried out with the fullest publicity so the foundrymen of the world may learn something of what it means to put over an international agreement even on a relatively simple subject. In addition to its great value to the foundry industry, this work will be an object lesson in international politics. It will tend to promote real understanding among a group of men engineers and business leaders, who as a class are going to be largely responsible in the future for the peace of the world. Thus not only science, but the comity of nations will be served.

Reducing Fire Loss by Inspection

ELSEWHERE in this issue the safety director of a large steel company outlines methods that have proved effective in fire prevention. After analyzing this article carefully, the critical reader inevitably will be led to the conclusion that while proper fire fighting equipment and personnel are of major importance, the most positive preventative against loss is a system of periodic inspection of all the possible sources of fire.

During the first nine months of 1923 the fire loss in the United States exceeded $300,000,000. According to experience covering losses suffered in recent years the principal causes, in order of importance, are electricity, matches and smoking, defective chimneys and fires, stoves, boilers and pipes, spontaneous combustion, and lightning. Except in the case of lightning, the danger from these causes can be greatly minimized, if not eliminated, by thorough inspection. In a measure this is proved by statistics showing that fires are more frequent in dull time than when plants are operating at capacity. In an idle establishment, the burden of inspection falls upon the watchmen and the few workmen on duty, whereas in a busy plant, all employes are potential observers.

Regardless of the rate of operations, the best protection lies in systematic inspection. When a conflagration results from defective wiring, careless use of matches, improperly guarded flues, or spontaneous combustion, the loss cannot be dismissed as "unavoidable," it is a serious indictment of the inspection service, or lack of it.

by obtaining expressions from all standpoints show themselves to be free of bias in approaching the subject. Hence their efforts should be welcomed by and should prove of helpful guidance to congress and the government.

Protest Rate Rise

Steelmakers and Railroads Give Evidence at Pittsburgh on Increase

Pittsburgh, Nov. 27.—Hearings on the question of increased freight rates in the tristate area, Pennsylvania, Ohio and West Virginia, particularly as regards short hauls in the Pittsburgh district bounded by Buffalo, Johnstown, Wheeling and Youngstown were conducted throughout the week at the chamber of commerce auditorium. Various steel manufacturers testified through their traffic managers to alleged discriminations in short-haul rates and the railroads were called upon to show cause why these rates should now be increased. Examiner C. R. Seale of the interstate commerce commission conducted the hearing. Charles S. Belsterling appeared as counsel for the United States Steel Corp. and was assisted by W. W. Collins. An attempt was made to have witnesses of the railroads account for every possible variation in existing rates between common points, some of which were pointed out to be the same as for longer distances. A. Blauel, chief of the tariff bureau of the Erie railroad, admitted that changes in the rates between Pittsburgh and Youngstown, and Youngstown and Cleveland would necessitate changing the Pittsburgh-Cleveland rate, which the proposed changes were not supposed to affect.

R. A. Williamson of the Nickel Plate railroad testified that the proposed changes were intended to place rates on the basis that should have been reached in 1917. C. E. Dempsey of the Wheeling & Lake Erie stated that no hard and fast rules could be laid down for differentiation between long and short hauls. M. S. O'Connor of the New York Central testified that the carriers asked an increase of only 15.8 per cent in rates.

F. A. Ogden, general freight agent of the Jones & Laughlin Steel Corp., presented cost data to show that 1913-1914 costs of structural steel and rails as compared with the present were practically the same while transportation expense had disproportionately increased.

H. C. Crawford, assistant general traffic manager of the Bethlehem Steel Co., presented statistics to show alleged discriminations in long and short hauls in the Johnstown, Pa., territory. J. A. Oakley, attorney and divisional freight agent of the American Steel & Wire Co., also presented statistical exhibits showing disparity in freight rates between long and short hauls in steel and also many other commodities. C. D. Quinn of the Franklin Steel Works, Franklin, Pa., A. J. Benson of the National Tube Co., V. E. Milsark, traffic manager of the Parkersburg Rig & Wheel Co., M. W. Eisman of the Manufacturers' association of Erie, Pa., and Wilson Heidman of the Alliance Machine Co., also presented exhibits showing increased freight revenues and demonstrating the effect of increased rates on costs.

Guernsey Orcutt was attorney for the combined railroads, Baltimore & Ohio, Bessemer & Lake Erie, Pennsylvania, Pittsburgh & Lake Erie, Pittsburgh & West Virginia, Pittsburgh, Chartiers & Youghiogheny, and the Buffalo, Rochester & Pittsburgh. W. C. Gleyn, assistant traffic manager of the central region of the Pennsylvania railroad, gave a history of rates on steel leading up to the present rates. He told of the zoning system by which carriers fixed transportation charges. In cross-questioning Mr. Gleyn, Mr. Belsterling representing the steel interests, attempted to show that rates on steel have been raised decidedly during the past six years.

A schedule in bankruptcy has been filed for the Asbestos Materials Corp., New York, with liabilities of $39,239, and assets of $6810.

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Sheet & Tube Reports Combined Profits

Net profits of $3,341,346 are reported by the Youngstown Sheet & Tube Co., for the third quarter of 1923. This is the income statement including the recently acquired Steel & Tube Co., of America. The net was shown after charges and expenses, including taxes. Total income for the quarter from all sources was $7,526,311.

Surplus after dividends on common and preferred stocks was $1,857,620. The total income for the company for the first nine months of 1923 was $26,414,647, while net profits available for dividends were $14,689,899, with a surplus of $9,878,734. The income account for the third quarter and nine months follow:

	3 months ended Sept. 30, 1923	*9 months ended Sept. 30, 1923
Total income, all sources	$7,526,311	$26,414,647
Miscellaneous special charges, including interest on loans	425,449	1,400,285
Net income	$7,100,862	$25,014,362
Provision for depreciation of plants, depletion of mineral properties	2,105,395	6,110,420
Net earnings	$4,995,467	$18,903,942
Interest on bonds	1,124,639	2,120,561
Premium on bonds retired	21,665	21,665
Amortization of bond discount	41,817	41,817
Net profits before federal tax	3,807,346	16,719,899
Provision for federal tax	466,000	2,030,000
Net profits for period	$3,341,346	$14,689,899
Dividends paid—		
On preferred stock	249,219	1,339,474
On common stock	1,234,507	3,456,621
On minority stockholders' equity in subsidiary companies		15,070
Surplus bal. for period	$1,857,620	$9,878,734

*Earnings of combined properties, including Steel & Tube Co. of America and subsidiary companies.

On Sept. 30 last the balance sheet of the company showed current assets of $86,502,161 and current liabilities of $18,009,805, or a ratio of 4.80 to 1. The books indicated net tangible assets of more than 2½ times the outstanding funded debt and a book value of $103 a share for the common stock.

To Rebuild Foundry

Rebuilding of the foundry of the Landis Tool Co., Waynesboro, Pa., which was badly damaged by fire Nov. 21, will be started immediately. The foundry was located in Greencastle, a suburb of Waynesboro, its loss due to the conflagration totaling about $200,000. The Landis foundry was the main industry of the town. Heavy insurance was carried on the damaged building and it is believed that the loss is almost covered. New machinery and equipment will be ordered at once.

The Business Trend

November 29, 1923

BY JOHN W. HILL, FINANCIAL EDITOR

BUSINESS sentiment has undergone marked improvement in the past month. There are two reasons for this. One is found in the failure of dark forebodings for 1923 to materialize. The other is found in the recent flood of favorable developments.

Most important of these have been the sweeping stock market advance, the wave of extra dividends, Secretary Mellon's tax reduction plan, the gain in building, the buying movements in copper and pig iron and prospects for large railroad equipment demand.

Depression Fear Banished

These events have freed business from the fear of a sharp trade reaction. All retarding factors have not been removed, however. Europe is seething in uncertainty. Buyers' caution continues in most lines and production costs are high. No boom is indicated, but rather a period of steady trade.

The pig iron movement has overshadowed all other industrial events. Much of the iron has been sold on an unprofitable basis. However, the prolonged decline has been checked. Moreover, requests for 1923 deliveries indicate that consumers' stocks are low.

The rebound of foreign exchanges came with the bridging of another crisis threatening the entente. British sterling and other European exchanges are still far below the year's high. Germany's financial and economic distress deepens.

Marks have lost their value and the new German currency is following in their inglorious path. Ruhr industrialists have signed agreements with France. The British election proceeds on the tariff issue, but the real crux of England's troubles lies in the wreck of European markets.

The stock market has regained about one-third of its loss from the spring peak. This has influenced business sentiment. Credit is easy, with commercial demands for funds less and the flood of gold into United States continuing.

Easy money is boosting the bond market. New issues are easily absorbed in large volume. The railroads soon will enter the money market for $300,000,000 to complete the financing of new equipment.

Railroad Needs Large

Railroad needs will call for expenditures of nearly $8,000,000,000 in the next few years, it is estimated. That is important to the iron and steel trade, because railroad buying is the backbone of industrial activity.

The slight increase in October employment coincided with the rise in wages reported by the National Industrial Conference board for the month ended Nov. 14. Increases numbered 151, or more than in any month since June.

The Barometer of Business

Nov. 26, 1923

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures..	406	389	387	497	...
Cash Ratio Fed. Res. System....	77.1	75.6	76.8	76.7	...
Loan Rate, 4-6 mo. N. Y. (per cent)	5-5¼	5-5¼	5-5¼	4½	5½
Aver. 25 industrial shares	$106.74	$103.98	$99.67	$106.07	$58.19
Aver. 25 rail shares	$58.95	$57.64	$55.48	$63.46	$82.90
Aver. 40 bonds....	$76.36	$76.23	$75.81	$79.40	$93.00
Car loadings (week ended Nov. 10)...	1,036,067	1,035,776	1,084,458	944,186	*927,586
Bank Debits, 247 cities (000 omitted)	$11,027,107	$9,314,491	$9,222,978	$9,574,983	.....

*1920.

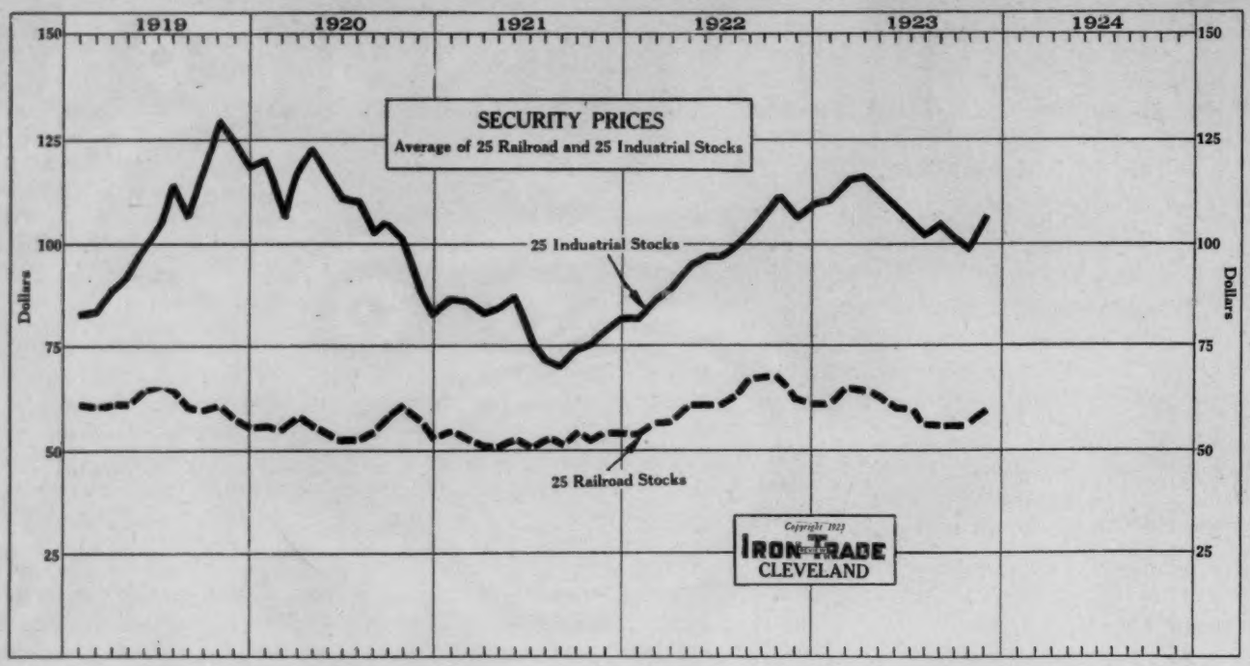
FOREIGN EXCHANGE (Demand)

	Normal	(Close)	Week before	Month ago	Yr. ago
Sterling	$4.86	$4.37	$4.28	$4.49	$4.50
Francs	19.3c	5.44c	5.24c	5.91c	7.15c
Lira	19.3c	4.34c	4.20c	4.52c	4.74c

MONTHLY COMPARISON

	October	Month before	Year ago	Monthly average 1913
Dodge building Awards in 36 states	$360,687,000	$288,931,000	$287,000,000	$82,126,000
Business failures:				
Number	1673	1226	1708	1336
Liabilities	$79,301,741	$28,000,000	$34,647,000	$22,732,000
Exports	$402,000,000	$381,000,000	$370,000,000	$207,000,000
Excess of gold imports	$28,550,000	$26,780,000	$3,274,561	†630,716
Bureau of Labor Price Index....	153	154	154	100
Bradstreet's Price Index	141.6	139.7	130.7	100
Economist's British Price Index	4320	4305	4260	2717
Cost of Living Index	163.4	161.6	155.6	100
New incorporations	$704,000,000	$500,830,000	$651,700,000	$172,301,000
Railroad net earnings	*$92,200,000	$98,000,000	$58,450,000	$59,301,000

†Monthly average excess exports. *September.

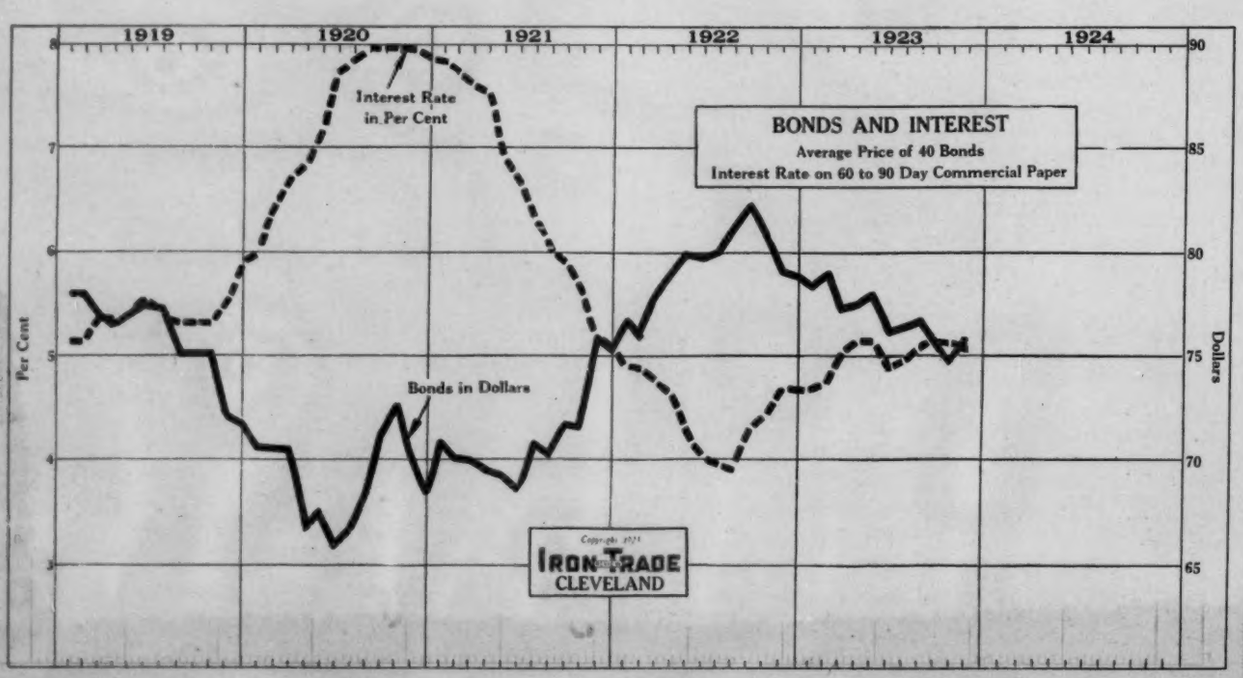


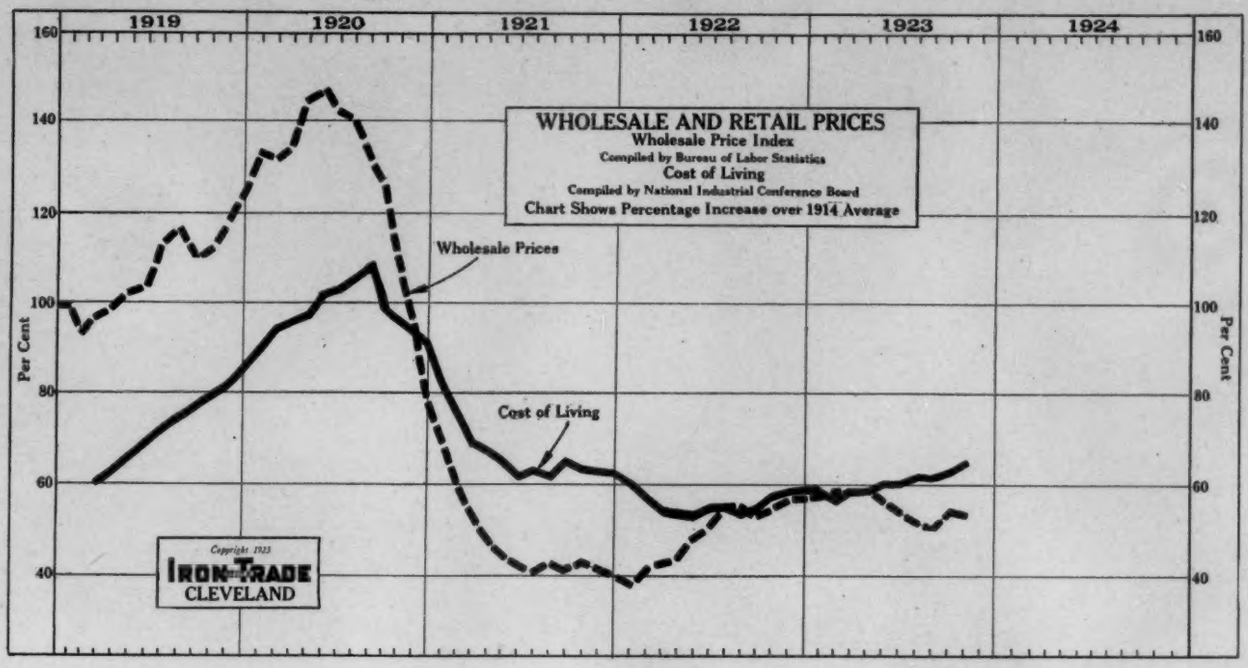
Security Prices

AVERAGE prices for 25 industrial and 25 railroad shares reached their 1923 high points last March. From this level a decline began, continuing until early November, except for a faint show of strength in August. Since the sustained advance began industrials have regained one-third of their lost ground and rails, one-fourth. The rise followed the declaration of the extra dividend by the United States Steel Corp. It has continued with the development of many additional favorable events and the brightening of the outlook.

Bonds and Interest

INTEREST rate levels determine the rate of return for bonds. When this return rises it means that bond prices are falling. When interest rates decline bond prices rise. Low interest rates and advancing bond prices usually reflect a period of slackened trade, when money for commercial needs is in reduced demand and funds are flowing into fixed investments. In October interest rates touched the top and started down. Bond prices are slightly higher. Large bond issues have been readily absorbed.



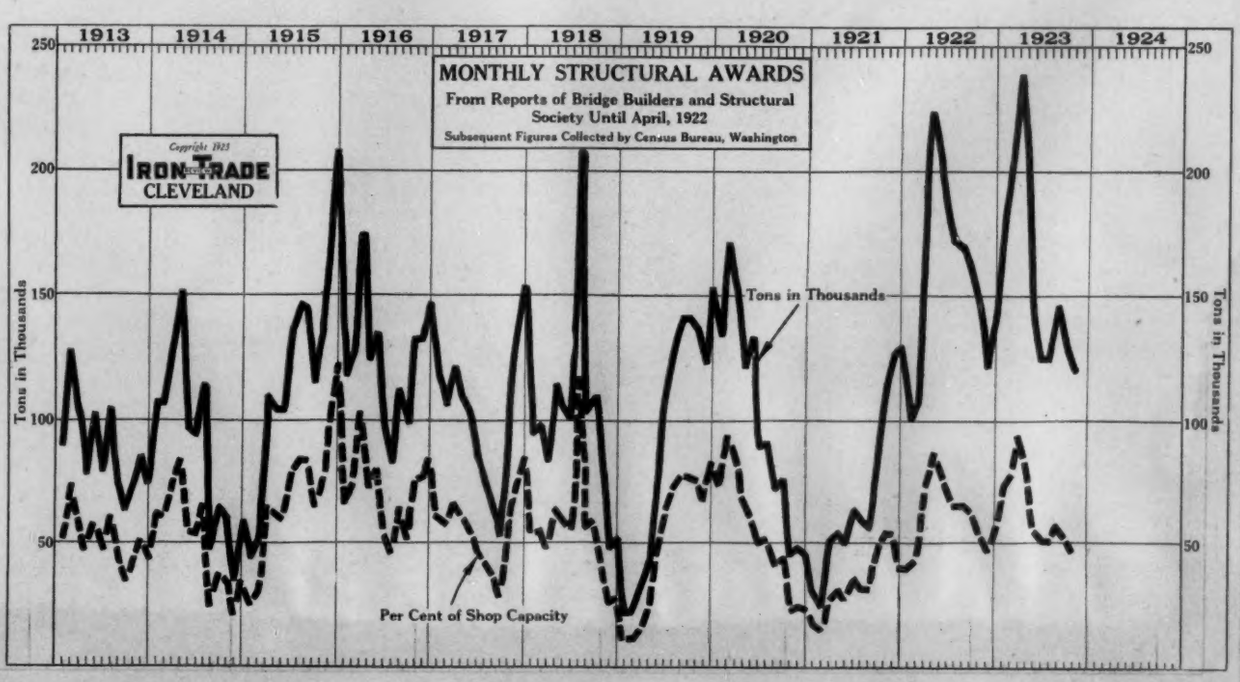


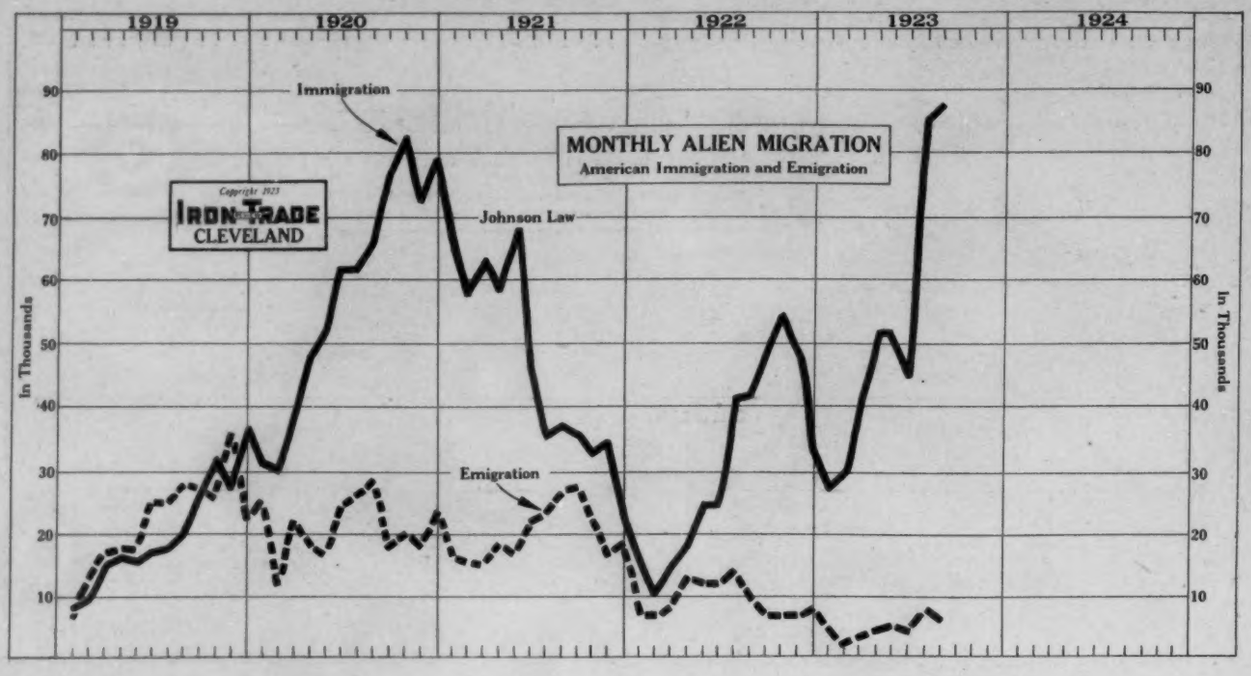
Wholesale and Retail Prices

THE movement of wholesale prices in 1923 has been notable for its evenness. At 53 per cent above the 1913 level the bureau of labor statistics index for all commodities at wholesale is 4 per cent below the year's top and less than 1 per cent under one year ago. Living costs, according to the National Industrial Conference board, have been rising. They are 5 per cent over one year before and 64.1 per cent above 1914. The advance in retail prices this autumn is reflecting the higher raw material and wage costs earlier in 1923.

Structural Steel Awards

SALES of fabricated structural steel in October touched the lowest point since February 1922. The estimated volume of bookings for all plants was 120,000 tons. That was 48 per cent of capacity, against 53 per cent in September and 87 per cent at the peak in April. The decline from the year's top has been 45 per cent. Despite this recession reports from many sections indicate that a substantial volume of business is pending for proposed projects. Builders have been delaying deals in the hope of lower prices.



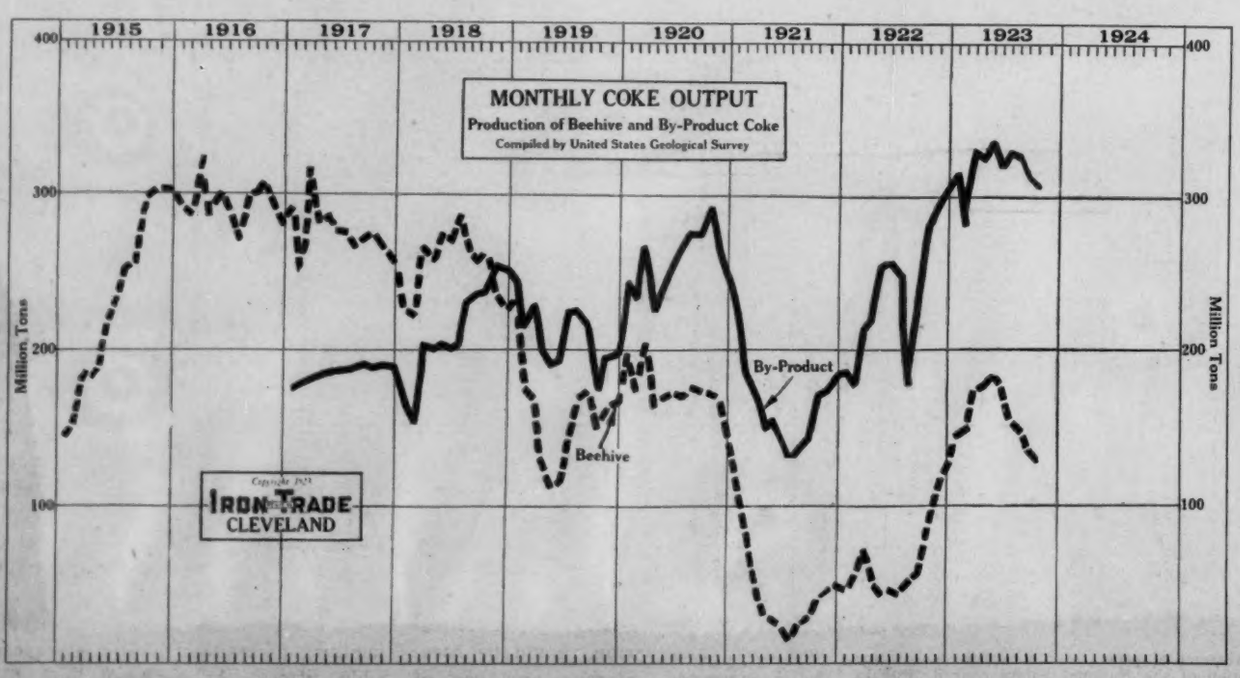


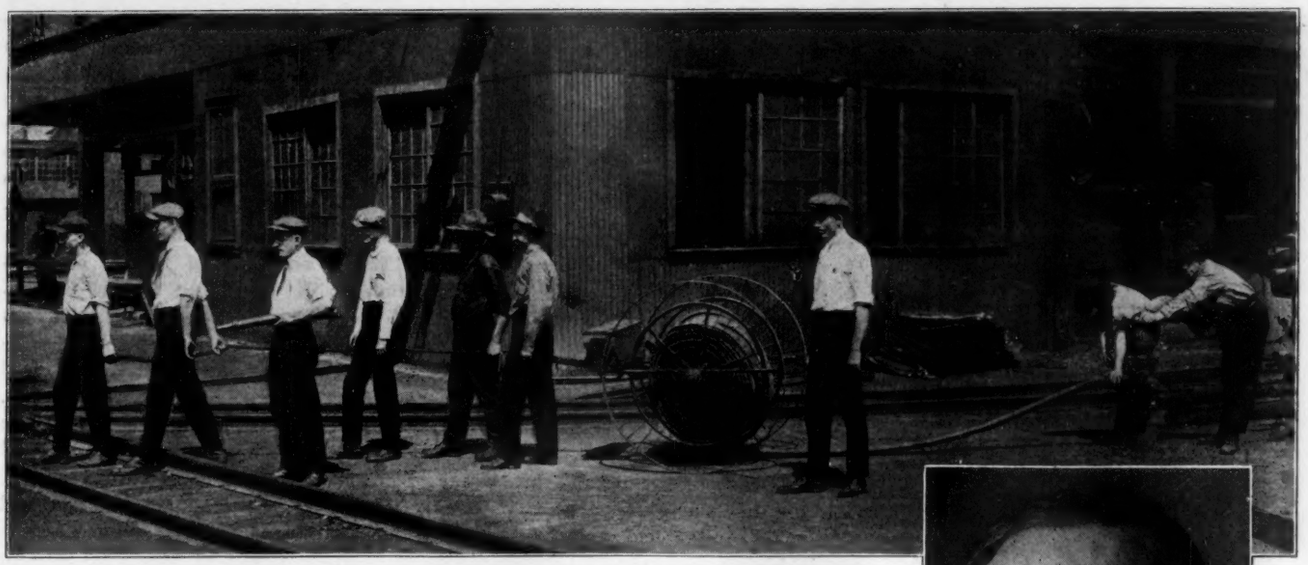
Alien Migration

THE great rush of immigration this year is depicted by the curve in this chart. Demands for labor and prevailing high wages in the United States combined with unpleasant economic conditions in Europe have sped the rush of aliens. Monthly totals in 1923 have reached the highest figures since 1913. Because of the Johnson 3 per cent restriction law the quotas of a number of countries are filled until the next fiscal year begins in July, 1924. Fewer aliens are departing than at any time in a generation.

Coke Production

DECLINES in coke production have gone hand in hand with the weakness in both the coke and pig iron markets in recent months. In October by-product output of 3,099,000 tons was 6.7 per cent below the peak in May but 32 per cent above the monthly average for 1922. Beehive production in October at 1,290,000 tons was 29 per cent under the year's top, and 91 per cent above the 1922 average. The production of by-product coke passed that of beehive late in 1918 and it has maintained an increasiug predominance since.



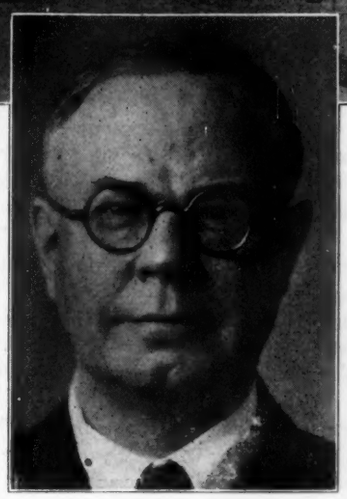


Fire companies are recruited from employes, who are especially trained in fire prevention work, and receive extra compensation

Protecting Iron and Steel Plants from Fire

Well-Organized Companies of Trained Employes, and Complete Equipment Necessary—How One Large Valley Interest Has Solved Problem

BY JAMES M. WOLTZ



JAMES M. WOLTZ

ALTHOUGH they are built largely of steel, concrete and brick, iron and steel plants require a thorough system of fire protection. In one of the works at East Youngstown, O., as many as 70 to 100 fire alarms are turned in each month, and each one of these calls into action one to three of the plant's fire companies. It is due to complete equipment, well placed, organization, training and the ability of the firemen that almost instant response is given to such alarms, and that serious conflagrations are averted.

Accumulations of oil and dirt in pits, wood piles, railroad ties, oil dipping and spraying tanks, oil-soaked floors, flashes from rolls, motors and trolley bars, hot steel placed too close to buildings or in wooden cars, all present fire hazards. Oil, benzol and other inflammable materials sometimes spill and are set on fire by locomotive sparks. A hot metal spill may cause serious results.

In starting fire-prevention work an accurate map of the plant, drawn to scale and showing all structures, is necessary. A careful inspection should be made of all nooks and corners of cellars, attics, pits and floors of every building. The fire hazards should be studied to determine where to place extinguishers, hydrants and hose racks. Ample aisle space should be provided to permit the unimpeded use of fire equipment.

When the plant organization is large and the executive offices are located miles away the map is usually the only available source of information regarding local conditions. It should be kept up to date and should show the location of high and low-pressure water lines, sprinkler systems, valves, gates, drains, cutouts, pumps, hydrants and other hose connections, hose reels, risers, fire houses and special equipment. Fire boxes and fire alarm lines also should be shown, and the various zones should be accurately indicated. Even a small plant should be mapped.

Oily waste, greasy overalls and working clothes are dangerous. Dust of any kind is explosive when properly mixed with air. The electrical equipment and wiring should be carefully inspected. Storage and use of wood, coal, oils, gas, gasoline, benzine, benzol, xylol, chemicals, waste, etc., should be carefully regulated, and no open fires, lights, or smoking should be permitted where such supplies are used, stored or issued. The location of steam and hot water pipes should be noted, as paper or other inflammable material may come in contact with them. Neither paper nor cardboard shades for lamps of any description should be permitted. All openings through which steam, hot air or stove pipes lead should be protected by fire-resistant material, especially if structures are of wood.

If the fire apparatus is not distributed to advantage or where it is easily accessible it represents a waste of money. A few moments delay at the beginning of a fire may result in serious loss of property or life. The location of hose, extinguishers, reels, etc., should be decided by the operating and engineering departments. Fire doors should be inspected daily. Frequently these inspections reveal defects which would prevent the automatic action of the doors.

It is necessary to arrange special facilities to extinguish fires at inaccessible places. At each of our blast furnaces we have placed a 2½-inch

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Abstract of paper read at twelfth annual convention of the National Safety council, Buffalo, Oct. 1-5. The author is director of safety, Youngstown Sheet & Tube Co., Youngstown, O.

water line along the stairway leading to the top of the stoves, and along the platforms. To this is attached 100 feet lengths of 1¼-inch rubber, wire-wrapped hose, with nozzles having ⅝-inch tips.

On an alarm indicating a fire on top of a furnace, two firemen hasten to the boiler house and speed up the pump attached to the special risers, raising the pressure from the normal 110 pounds to 250. The hosemen and nozzlemen, along with the captain rush up the flight of 118 steps and stretch the line, going anywhere around the top of the furnace. Fires at this point usually arise from lighted gas igniting oil-soaked dust or oil on the cable and wheel of the hoist.

Space should be provided to operate fire-fighting equipment. Do not permit material to be piled in front of, over or around the reels and hose houses. Aisles with ample passages to haul the carts and extinguishers mounted on wheels, and to transport them through the building and yards, should be provided and always kept clear of obstructions.

Frequent and thorough inspection of all equipment should be made. Forms and records must be provided to check such work. Systematic and careful attention to every detail is essential.

Organization depends entirely on the plant, its size, product, location, fire-fighting equipment, hours of operation and protection available from outside sources.

The careful selection of a head for the fire brigade is important. He must be a diplomat, as he will be in contact with the operating department and the entire force of employes. He should know what is safe to use to extinguish fires, and should be familiar with material that is difficult and dangerous to handle. He must understand details regarding power lines, water supply, exits, fire escapes and the like. When a fire occurs his authority in the threatened district should supersede that of all operating officials. If the plant is large there should be an assistant for night duty and perhaps one for day relief.

Fire Force Well Organized

Fire companies may be composed of six to 12 men, a captain, lieutenant, one hydrantman, two to four nozzlemen and hosemen. In some plants salvage corps, ladder truck companies and other organizations may be required.

From the companies are made battalions, and from these the brigade. The number of companies in a battalion will depend entirely on the arbitrary divisions made in the works. We have as few as two companies in several of our battalions, and the largest has 10. There are 524 employes in our Youngstown district fire brigades.

Each battalion has its chief or commander. One of the company captains is usually designated as assistant. Companies are composed of workmen who can be spared from ordinary operations, but they should include a considerable number of mechanical men, such as electricians, pipe fitters and the like, as these men are scattered throughout the plant, know the electrical hazards, where power can be cut off from affected areas without disturbing others, and the location of water lines, gates and valves. It is highly important to know if it is safe to throw water on a power line.

Close Inspection of Equipment

Fire headquarters should be located as centrally as possible. There should be space enough to house wheeled or motor equipment. Repair work should be done at this station. Hose should be inspected, repaired and dried here, and all used equipment should be cleaned and inspected. All records should be kept and reports made at this station. To do this requires the services of inspectors, repairmen, operators and clerks.

In our plant we require an inspection of all fire equipment twice daily. This is done by our patrolmen on their regular rounds. A written report of conditions is made at the end of each turn. If used or empty equipment is found by a patrolman he immediately notifies fire headquarters, and a man is sent to bring in the equipment or refill it and replace it in its proper station.

A report of this is made by the fire inspector and this is recorded on a card. In case an extinguisher is refilled the metal tag on the apparatus is punched to show the month, day and year. A check set of cards are made up with the record of each extinguisher, showing location, number, make, size, and last date filled. These are filed by months, and when any soda and acid extinguisher has been unused for 12 months, it is discharged and refilled, and a record made on the metal tag and the card. The card is then set back for 12 months, and when the time elapses it automatically comes up for action again, provided the tank has not been used and refilled in the meantime.

Captains are required to make reports of all responses to alarms, and must hold at least two drills each month. These also are reported on certain forms. From these reports we make up our payroll. We pay $1 per month to each member who attends the drills. In addition he is paid 25 cents for each alarm responded to upon call. If hose is laid he is paid at the rate of 50 cents per hour for every hour he is on fire duty. This is reported by the captains upon regular forms.

The money is paid to the employes semiannually after July 1 and Jan. 1. In the winter we have a dinner at our works offices and vouchers are distributed. In the summer we have a field meet with various contests, band music, dining and voucher distribution. The company's Youngstown district payroll for this purpose is about $10,000 a year.

Hose is tested at stated intervals and results recorded. Twice a year it is taken from its station, water run through it, the outside casing washed, drained and dried. Each hose house has a red lamp in front of it, lighted at night. It also is provided inside with an electric lamp that lights automatically when the doors are opened.

All hose houses and boxes are kept sealed. If a seal is found broken by a patrolman, he reports it to fire headquarters. An inspector visits the station, checks up the contents, replaces what may be missing and reseals it.

Hose and all other fire equipment, including hydrants, should be used for fire purposes only. The fire chief is the only person who can, in emergency, permit the use of fire equipment for other purposes. When our fire hose becomes worn or old, a band of red about a foot wide is painted around each end of it and it is then turned over to the operating departments for ordinary use.

Extinguishers Fit Needs

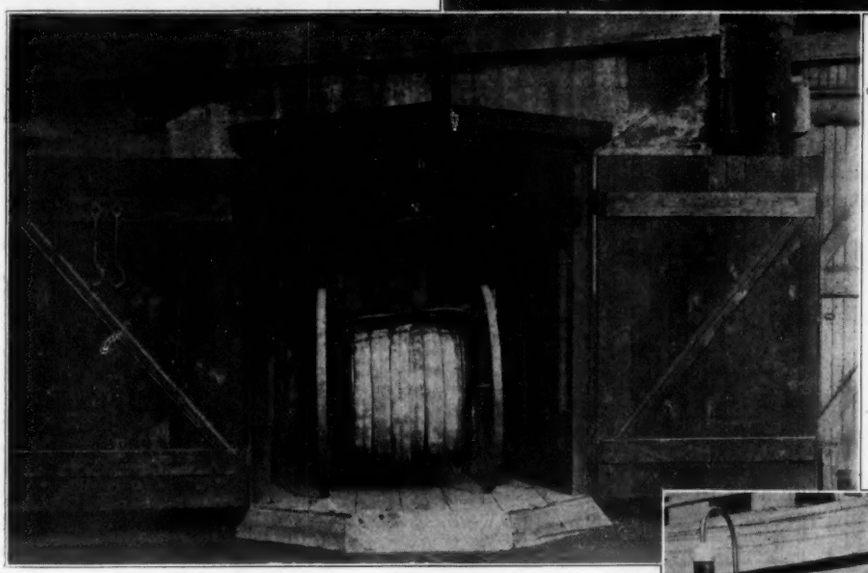
We use 1-quart, 2-quart, 1-gallon and 10-gallon pyrene extinguishers; 2½, 5 20 and 40-gallon soda and acid, and 2½ and 40-gallon fire-foam extinguishers. These are distributed according to the requirements of the works, the pyrenes where there are electrical hazards, the soda-and-acid where the danger is greatest from wood fires, and the fire-foam where the oil and gas fires are the principal dangers. All of our power-houses have 10-gallon tetrachloride machines. These are operated by air pressure. In winter the soda-and-acid and fire-foam machines are kept in electrically or steam-heated compartments. All apparatus is numbered to correspond with the numbers of the stations.

Roofs are reached by steel ladders equipped with steel safety backs. Hose boxes, with a full equipment of hose, wrenches, nozzles, ropes, axes, etc., are located on tops of buildings. Risers, from ground to roof, are placed at con-

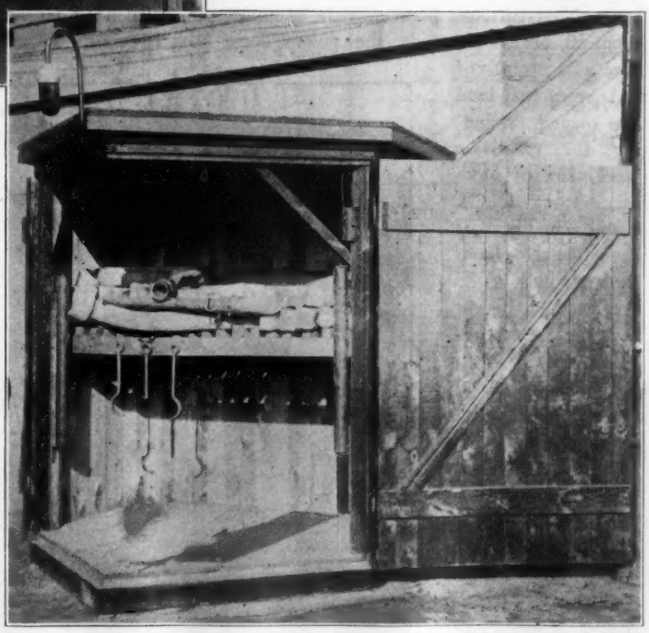
venient points. Railed crossovers are provided between high and low bays.

We have a triple combination, 750-gallon pump supplied by the American La France Fire Engine Co. This responds to second alarms only, except in our housing district. We also have a fire alarm system with 71 boxes, divided into zones, and a police call system installed by the Gamewell company.

A fire alarm sounds only in the zone from which it is sent. If necessary to call additional companies any one or all zones can be connected, and as much of the equipment of the fire brigade may be summoned as needed. This system has the advantage of only calling to fires the force really needed, not disturbing other employes.



HYDRANTS, hose and conveyances are distributed at many strategic points throughout the works. The location of equipment is determined by the engineering and operating departments. All of the equipment is inspected at regular intervals.



After a fire alarm is received at police headquarters, where the board, switches, etc., are located, the operator fills in a card form, addressed to the superintendent of the department from which the alarm was sent, and incloses a blank form upon which the superintendent reports to the safety department the cause of the fire and damage sustained. This is sent to the engineering department. The engineer in charge of insurance gets in touch with the underwriters' adjusters and the damage is estimated. All of our insurance is carried by outside old-line fire insurance companies.

In case of damage to insured property the safety department and district superintendent are notified by telephone by police headquarters and department superintendents, so that immediate investigations and inventories can be made with the insurance adjusters.

On the first of the month a form is sent to each head of a department upon which he makes a report of new buildings, material, and equipment added in his department, also of buildings torn down, machinery abadoned, scrapped or moved, and material or stock covered by insurance used up, moved or discarded. This is sent to the insurance bureau of the engineering department. Such reports have been the means of bringing to light some rather surprising facts. We have a city alarm box in police headquarters that is used to call the city fire department when a fire has the appearance of being dangerous. We consider our department as a first-aid measure, and do not hesitate to ask for help if there is need for it. When the city department responds, its officials assume full control of the work.

As the plants cover many miles of territory, much of which is difficult to reach, we have equipped each of the standard-gage locomotives with 1½-inch rubber-lined hose and nozzles, carried in the cab or on reels on the tanks. Water is supplied from the injector line. Nozzles are protected to prevent burns from heated water. We have found this to be well worth while.

Completes New British Furnace

New 400-Ton Stack Recently Built at Middlesbrough Is Equipped with Bucket Type Charging Apparatus—Electric Power Is Generated from Waste Heat—Bell Is Raised and Lowered Hydraulically

BY JOSEPH HORTON
British Correspondent Iron Trade Review

BUCKET type charging equipment is more or less favored for European blast furnaces but until recently only a few British stacks have been provided with charging apparatus of this character. A new stack recently built at the Clarence Ironworks, Middlesbrough, however, is so equipped and in addition, has several other interesting features. The Clarence Ironworks is operated by Bell Bros., Ltd., which is in turn a subsidiary of Dorman, Long & Co., of Middlesbrough.

The new furnace replaces two old stacks, reducing the number of stacks at the plant to seven. Plans are being considered to build an additional furnace of the same type as the one just blown in. The new furnace is 85 feet in height with a 21-foot 6-inch bosh. Using Spanish and Cleveland ores, it is designed for a capacity of 300 to 400 tons per day.

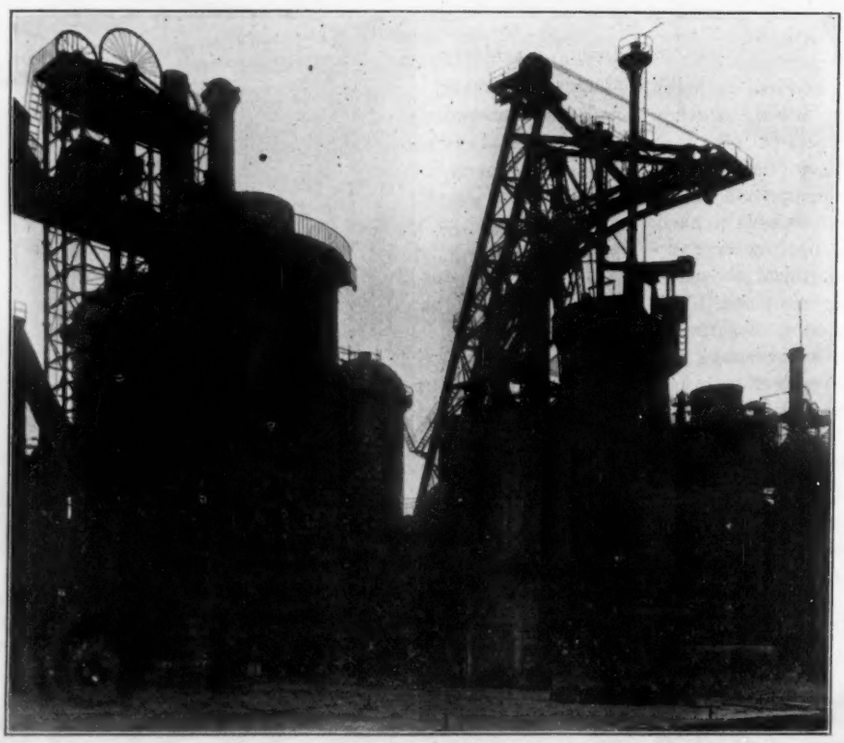
The new furnace was built by Head, Wrightson & Co., Ltd., Thornaby-on-Tees, England. It is only part of a large blast-furnace plant which occupies over 50 acres alongside the river Tees, where a total of 800 acres of land are owned, including the extensive steel paint of Dorman, Long & Co. Total height of the furnace from the ground is 85 feet, the height to the charging bell being 75 feet. The hearth is 12 feet 6 inches in diameter, the bosh 21 feet 6 inches, the throat 17 feet, and the bell 11 feet. In addition to the tuyere coolers, the bosh is provided with spiral spray coolers. The bustle pipe is 4½ feet in diameter outside and 30 inches inside. The water for the coolers is supplied through 10-inch cast iron mains connected to a vertical manifold.

The main bell has a three-point suspension on a ring supported from the bell beam. The suspension rods slide in floating stuffing boxes and the three-point system insures vertical movement of the bell. The bell is raised and lowered hydraulically. Weighted levers are employed to keep the auxiliary bell on its seat, the levers terminating in jointed hemispherical supports. By a parallel motion, arrangement of the levers, vertical descent is secured when the weight of the charge in the buckets causes the lowering of the seals. A battery of seven dust catchers is provided.

The special feature of the plant is the Wrightson-Ringquist bucket-type charger. The buckets used each have a capacity of eight tons of ore and limestone or 3 tons of coke. The charging bridge is of steel construction, of the cantilever type, no portion of it being supported on the furnace casing. The traveling carriage from which the bucket is suspended is of special design. It consists of a mild steel framework, carried on six cast-steel wheels. The trestles and bridges are constructed of rolled steel sections, strongly cross-braced and riveted together to withstand the stresses due to wind and the hoisting of the load at maximum speed.

The front end of the carriage from which the bucket is suspended is carried upon two equalizers, each mounted on two wheels; the tail end of the carriage is carried upon two wheels running on the same track. The charging bucket is suspended by a link chain passing over a sprocket wheel rotatively mounted in the center of a shaft secured to the forward end of the carriage. One end of this chain is provided with a special hook to engage the button on the top of the suspension rod or stalk of the bucket; the other end of the chain is attached to the rear end of a pair of toggle levers which slide in the side members of the carriage when the latter is in position over the furnace.

On the center hinge pin of the toggle levers is mounted a wheel which runs on an inverted rail secured to the hoist bridge. This rail is curled upward at the top to a radius equal to the length of the forward toggle lever. The effect of this arrangement is that whereas the toggle levers are fully extended when traveling up the incline, the curve in the rail permits them to close up for the purpose of lowering the bucket on to the furnace top. A steadying arm is attached to the front end of the traveling carriage, running on a track on the bottom chord of the bridge. Due to the position of this arm, the bucket hangs slightly out of the vertical when traveling up



THIS BLAST FURNACE JUST COMPLETED AT THE MIDDLESBROUGH, ENGLAND, PLANT OF DORMAN, LONG & CO, IS EQUIPPED WITH A BUCKET-TYPE CHARGER

the bridge. This makes it certain that the pressure of the bucket against the arm is always in excess of the wind. By this means any acceleration or retardation on the bucket is prevented.

Twin hoisting ropes are used, either one being sufficient to carry the full working load in the event of the other giving way. The ropes are led from the hoisting drum over idler sheaves to the rear joint pin of the toggle levers on the carriage, being finally anchored to the forward end of the bogie framework. From the drum, the tail ropes are led over floating idlers at the tail end of the bridge to the rear joint pin of the toggle levers, and anchored at the rear end of the carriage. The idler sheaves are mounted on dudgeons provided with guide blocks arranged to slide in fixed guides. These sheaves are connected by stirrups to floating balance weights working in vertical guides inside the machinery trestle. This insures a constant and uniform tension throughout the whole rope system. A balance weight running on the top of the bridge is attached by twin wire ropes to the front end of the carriage framework.

Electric Drive Is Used

The charging apparatus is controlled from a cabin at the ground level situated at the foot of the machinery trestle where the operator has an uninterrupted view of the hook while hitching on both coke and ore buckets. By means of indicators the movements of the various controls in the machinery house are indicated and reproduced by the movements of levers in the operator's cabin.

The hoisting mechanism consists of a cast-iron drum operating through a double spur gear reduction from either of two motors, with Ward-Leonard type control. A cast-iron brake drum is keyed to each end of the first reduction pinion shaft, with one half of a jaw clutch cast integral with each drum. One of these drums is for use in connection with the automatic solenoid brake and the other serves as an emergency hand-operated brake. Either brake can deal with the maximum out-of-balance pull of the ropes at any part of the cycle. The furnace is served by six Cowper-type stoves each 80 feet high to the springing of the dome and 21 feet in diameter.

Each charging bucket consists of a cylindrical casing terminating in a conical frustrum at the lower end, the bottom being closed by a bell firmly attached to the suspension rod. At the lower end of the bucket is a cast steel seat upon which it rests when delivering its charge into the furnace. This enables the suspension rod to be lowered for a distance of approximately 2 feet 8 inches and gives a free opening between the bucket and the cone. During loading operations the bucket is revolved on turntables.

The gas cleaner is of the Kling-Weidlein type. It consists of four units, each with a capacity of 15,000 cubic feet per minute.

The other arrangements of the furnace may be summarized briefly. A hot metal track has been provided in front of the furnace to carry the iron to the steelworks. The blast is supplied by a Frazer & Chalmers turboblower of 25,000 cubic feet per minute capacity at 14 pounds pressure. The turbine develops 1640 horsepower at its normal speed of 3050 revolutions per minute with a steam pressure of 150 pounds per square inch. Two Mather & Platt-type centrifugal pumps supply the necessary cooling water at a rate of 2000 gallons per minute. The ore sintering plant is installed at the waterside edge of the property. It has a capacity of 600 tons of sintered ore in 24 hours. The plants for preparing the fuels and flux, and for the preparation of the ores are entirely independent and self-contained, being placed one at each end of the furnace layout, with storage bunkers between to which they are linked by an overhead gantry crane of 10 tons capacity running on a track 400 feet in length. A plant for the manufacture of bricks from blast-furnace slag is provided.

Steam is furnished by three water-tube boilers manufactured by John Thompson, Wolverhampton. They are fired by blast-furnace gas. The electric power will all be generated from waste heat. The company operates in conjunction with the Cleveland & Durham Power Co., a company having a number of generating stations in which the general waste heat of the district is converted into power and supplied to local plants. It is expected that the furnace plant will be able to generate on the spot all the power required and still have a surplus for use by local customers.

Reviews of New Books

Collects Corrosion Information

Causes and Prevention of Corrosion; by Alan A. Pollitt; cloth; 230 pages, 7 x 9 inches; published by D. Van Nostrand Co., New York and furnished by IRON TRADE REVIEW, Cleveland, for $6.50 net.

During recent years considerable information has been published concerning the subject of corrosion but as this material is scattered it has been difficult for those interested in the subject to secure the information conveniently. There has been no work dealing in a comprehensive manner with the practical aspect of the problem, its causes and the methods available for protecting metals from it. Therefore, in this volume it had been the author's endeavor to present as completely and concisely as possible the more interesting and practically useful information on the various phases of the subject. The work is not claimed to be thoroughly complete because of the incompletness of the knowledge in many directions, but it will serve as a convenient reference book. The author is associated with the Manchester College of Technology, Manchester, England.

A theoretical treatment of the subject of corrosion necessarily is included since knowledge is essential to the successful diagnosis and prevention or alleviation of corrosion troubles. This composes Part I of the book. Part II deals with the causes of corrosion and Part III, the prevention of corrosion. A number of illustrations and tables are used in the text. Part I consists of three chapters, namely, introduction; theory of corrosion and forms of corrosion.

Part II is made up of the following chapters: Function of oxygen; influence of the electrolyte on the corrosion of iron; influence on corrosion of factors inherent in the metal; water—its sources, characteristics and impurities; behavior of impurities in waters used for steam raising; and corrosion of condenser tubes. The following chapter headings make up Part III: Control of impurities and manufacture; oxide and nonmetallic protective coatings; metallic protective coatings; paints and allied coatings; and feed water treatment.

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Chemical Resistance Discussed

The Chemical Resistance of Engineering Materials; by Marston L. Hamlin and Francis M. Turner Jr.; cloth, 267 pages, 6 x 9 inches, published by the Chemical Catalog Co., New York, and furnished by IRON TRADE REVIEW, Cleveland.

During the period of rapid development and heavy construction brought on by the war, engineers with practically no previous chemical experience were called upon to build chemical plants, and in many cases found themselves greatly handicapped due to the lack of necessary information in a readily accessible form. Available data in compact form on the action of industrial chemicals on construc-

tion and other engineering materials was difficult to find and no comprehensive bibliography had been compiled to serve as a guide to the great mass of information in the literature on the chemical behavior of materials used in the construction of plants and apparatus.

The purpose of this book is to present the results of previous experiments and also the general information at present available, to serve as a bibliography for further study on this subject and to stimulate study and research along this line. The first portion of the book deals with the action of sulphuric acid on iron and steel, lead and other metals and also the action of the acids on the various metals. This is followed by discussions on the effect of acids on nonmetallic materials, the action of bases and salts on materials, neutral substances, selection of material for specific equipment and the use of concrete in chemical construction. In the appendix are included various tables, definitions, atomic weights, physical properties of materials and names of alloys. The volume is illustrated and contains a number of working tables.

* * *

Explains Foundry Cost System

Cost Control for Foundries, by Frank Everitt and Johnson Heywood; 226 pages, cloth, 5¾ x 9 inches; published by McGraw-Hill Book Co., New York, and sold by IRON TRADE REVIEW, Cleveland; price $3.00.

Without doubt every foundry has some kind of a cost system, no matter how crude. The only question is how far to extend the details of the system. This book lays the ground work for the acceptance of the system, it propounds by telling the foundryman in the first chapter what a cost system can do for him. Then after explaining the fundamentals of costs, a rather elaborate system, requiring 72 forms, is described in detail so that the reader may understand each step. The book offers a definite system for cost accounting and gives the details by which this plan may be adapted to the large foundry.

* * *

Preventing Vibration and Noise

The Prevention of Vibration and Noise, by Alec. B. Eason; cloth, 162 pages, 5½ x 8½ inches, published by Henry Frowde and Hodder & Stoughton, 1 Bedford street, Strand, W. C. 2, London, Eng., and furnished by the IRON TRADE REVIEW for $5, net.

To relate facts found in the course of an investigation to eliminate vibration in a specific instance and to indicate where fuller information concerning these facts may be found is the object of this book, according to the author. He seeks to make the subject matter useful to young engineers who are studying the subject of vibration and to older engineers who may find it convenient to have facts they already know collected within a single volume. Several pages of bibliography present numerous references to books and journals dealing with the subject, thus making available all the published material. After discussing annoying vibrations the author takes up their occurrence in various types of structures and proceeds to the discussion of isolating supports and damping devices, the isolation of sounds and noises and finally to balancing machines. Appendix I and II contain formulas for solving various problems arising in the determination of intensities and other quantities.

* * *

Basis of Business Control

Profitable Management, by J. Lee Nicholson; cloth, 117 pages, 5 x 7½ inches; published by the Ronald Press Co., New York, and furnished by the IRON TRADE REVIEW, Cleveland, for $1.25, net.

Apparently on the theory that to know the pitfalls of any path may forestall accident, the author's initial chapter is devoted to business failures, analyzing broadly the causes that lead to disaster. Figures from authoritative sources indicate many business failures are due to the prevalence of incompetence and lack of exact knowledge in business management. Simplicity of statement of fundamental principles is relied on to stimulate broad constructive thought and action in small as well as large business ventures. Lack of knowledge of costs as a basis of efficient control is stressed as one of the failures of many business managements. The book is a plea for careful statistical records at every step of the business from purchase of raw material to final delivery to the buyer. Since modern business usually is too complex for any one mind to control by personal oversight, reliance must be placed on records, bringing to the executive a birdseye view of the entire process. Budgets, conservation of invested capital to prevent waste in excessive stocks, control of production and cost through planning and standardization, uniform cost-finding methods, marketing, are some of the subjects through which the author presents his plea for efficient control of any business. A valuable feature is a list of publications dealing with industrial management, efficiency and cost accounting, from which the executive may select such as seem likely to shed light on his problems. The volume is of suitable size for the pocket and its brevity appeals where a larger one might be put aside as too formidable for a busy man.

* * *

Text Book on Practice

Foundry Work, by R. E. Wendt, cloth 206 pages 7½ x 4¾; published by McGraw-Hill Book Co., Inc., New York and supplied by THE FOUNDRY, Cleveland, price $2.00.

This volume is a text book of foundry practice including the subjects of molding, dry-sand, coremaking and the melting and mixing of metals. Its preparation was undertaken to provide a suitable text for schools and colleges and for use by apprentices in commercial shops. The subjects discussed are divided into three sections; fundamental principles, exercises and problems in molding, and the melting and mixing of metals.

The first section is devoted to an outline of foundry practices from the making of the iron in the blast furnace to the methods of treatment and the underlying theories of casting. A few of the topics in this section are molding sand, commercial foundry layouts, foundry cokes, flasks, and similar subjects. The second section deals with the molding problems and unusual methods necessitated by various patterns as well as the details of dry-sand core making and floor and bench molding.

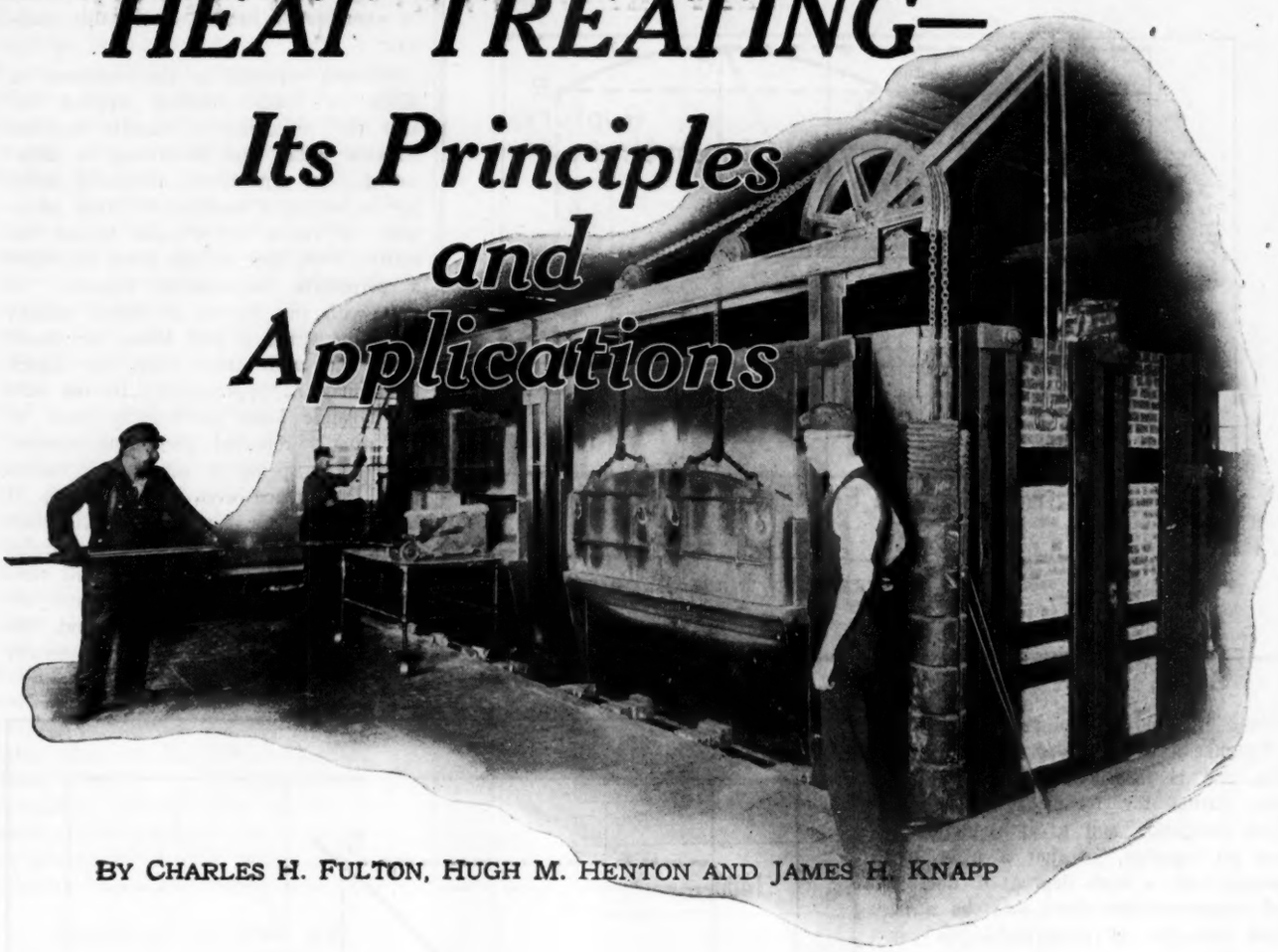
* * *

Classifies Uses of Alloys

Engineering Nonferrous Metals and Alloys, by Leslie Aitchison and William B. Barclay; 300 pages, cloth, 5½ x 8¼; published by Henry Frowde, and Hodder & Stoughton, London, England, and supplied by IRON TRADE REVIEW, Cleveland, price $7.00.

While affording a source of information regarding the properties and casting of nonferrous alloys, which is particularly valuable to the engineer, this book also contains much information for the metallurgist and the foundryman. After dealing with the theoretical side of the constitution of nonferrous alloys, and showing numerous thermal equilibrium diagrams and other charts together with micrographs the question of melting and casting the alloys is covered. Methods of heat treating are explained and the mechanical properties and methods of testing are discussed. Thus the information in the first part of the book equips the reader to understand the descriptions of alloys which follow, beginning with copper and its alloys, and taking up in succession aluminum and nickel with their alloys, and miscellaneous alloys. Many alloys are mentioned and the details of their properties and characteristics enable the engineer to determine which is the best suited for his purpose. He is assisted also by a chapter on specifications which not only gives standard specification but explains how to decide upon the proper specification to use.

HEAT TREATING—
Its Principles and Applications



BY CHARLES H. FULTON, HUGH M. HENTON AND JAMES H. KNAPP

Chapter III—Relation of Structure to Physical Properties

AS A structural material, steel is valued according to its physical properties. One of the most important properties of steel is its strength or tenacity, which enables it to resist rupture or breaking. Tenacity is expressed in four forms:

(a) Tensile strength or resistance to being pulled apart.
(b) Compressive strength, or resistance to being crushed.
(c) Shearing strength, or resistance to being sheared or cut.
(d) Torsional strength, or resistance to being ruptured by twisting.

In testing tenacity, the most common test is that for tensile strength, known also as maximum strength. This is determined in the testing machine, in which the test piece is pulled apart.

Other important physical properties are determined in the same test. Among these is the elastic limit, which measures the elasticity or the ability of a body to regain its original shape after having been distorted. When a body is put under the influence of a force like a pull, this force, known as the stress, produces a deformation, as for instance, a lengthening of the piece and a contraction of the cross-sectional area, which is known as the strain. Below the elastic limit the strain is not permanent and the piece resumes its original shape; but if the stress exceeds the elastic limit, the strain becomes permanent and hence the elastic limit is defined as the greatest load per unit of original cross-section which does not produce a permanent set or strain. When a body is subjected to a pull equivalent to the maximum tensile stress, it will contract in cross-sectional area and increase in length before rupture finally occurs. The total lengthening of the piece is known as the elongation and is usually expressed in percentage of the original length, as 25 per cent in 2 inches. The elongation causes a corresponding decrease in the cross-sectional area of the piece and the difference between the original cross-sectional area and the final smallest cross-sectional area at the point of rupture is called the reduction of area or contraction of area and is expressed in percentage of the original cross-sectional area. The reduction in area measures the physical property of toughness.

The elongation measures the ductility, the property of being drawn out or elongated without rupture. Malleability is a similar term but refers more specifically to the property of being hammered, rolled or pressed out of shape

Discuss Properties of Iron and Steel

IN THE accompanying article, which is the fifth of 18 installments and the beginning of Chapter III, the authors outline the principal properties of iron and steel. Later in the chapter, the relation of the structure to these properties is discussed.

Chapter I of the series appeared Oct. 4; Chapter II was published in the issues of Oct. 18, Nov. 1 and Nov. 15; and Chapter III, starting in this issue, will be continued in the issues of Dec. 13 and 27.

Charles H. Fulton is director of school of mines and metallurgy, University of Missouri; Hugh M. Henton is consulting metallurgical engineer and assistant professor of metallurgy and mining, State College of Washington, and James H. Knapp is furnace engineer, Tate-Jones & Co., Pittsburgh.

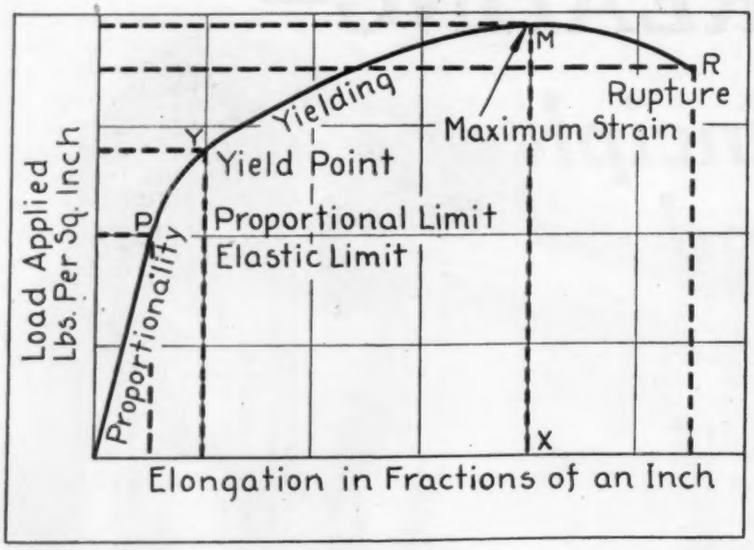


FIG. 24—STRESS-STRAIN OR DEFORMATION DIAGRAM OF TENSION TEST

without cracking or rupture of the metal.

Toughness is the opposite of brittleness, and is measured by reduction of area, during the tensile test. Usually great elongation and great reduction in area go together, so that a piece may possess both a high degree of ductility and toughness, but there may be a decided reduction of area without a corresponding elongation. Such a material would be said to be tough but not ductile. Brittle material shows little elongation and reduction in area, as for example, high carbon steel.

Hardness is the resistance to indentation, or the displacement of molecules by pressure. It also is the resistance to attrition or abrasion resulting from rubbing or wear. Hardness of steel usually is tested by two methods.

The first is the static indentation method, or the Brinell test in which a hard steel ball of given size is pressed into the test piece under a fixed load, usually 3000 kilograms (6600 pounds) for a definite time interval, usually 15 seconds. From the diameter of the impression a hardness number is calculated by formula.

The second or dynamic indentation method is known as Shore's scleroscope method. A small hammer with diamond point is allowed to fall freely in a properly graduated glass tube upon the surface of the test piece, the height of the rebound of the hammer being the measure of the hardness.

The Brinell test gives a very good indication of the ultimate tensile strength and is used to obtain a rapid estimation of this physical property. The scleroscope test gives an indication of the elastic limit, and is used for this purpose. The hardness test is discussed in some detail further on in this chapter.

Dynamic strength is the resistance to shock or loads suddenly applied and also the resistance to rapidly repeated stresses, either one directional or alternating. In general no structural member in use in a machine or other structure, is loaded or stressed beyond the elastic limit, that is, the point at which a permanent deformation appears. In fact with the factors of safety usually used, the stress is well below the elastic limit, but with static loads the elastic limit may be approached. In the case of dynamic loads particularly those of the rapidly repeated alternating stresses, such as a spring is subject to, failure may take place even if the stress is below the elastic limit. The safe limit to which such stresses can be carried is called the fatigue limit. Dynamic tests which determine dynamic strength are first, the impact test and second, the endurance test. The first is generally

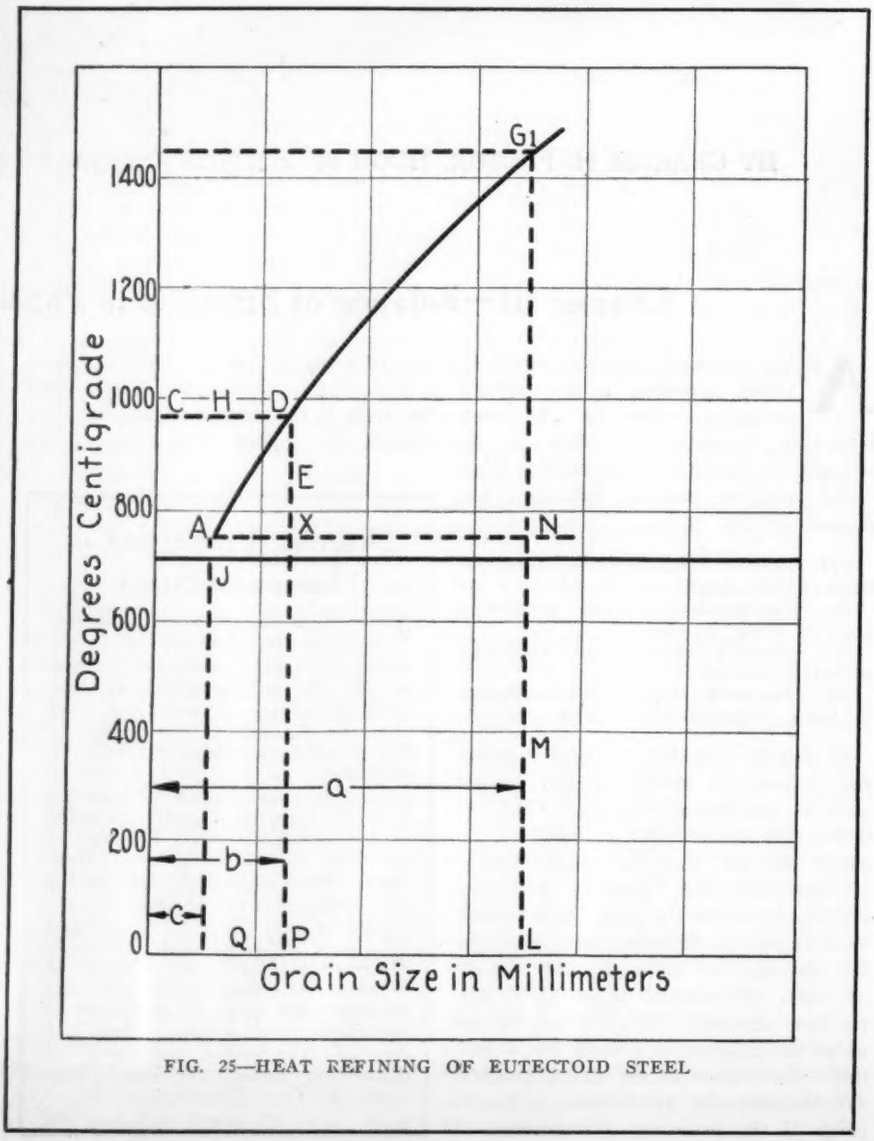


FIG. 25—HEAT REFINING OF EUTECTOID STEEL

carried out in a machine employing a falling weight, and the second in a machine in which the test piece is vibrated, resulting in repeated alternating stress. When a piece subjected to the impact test is notched at the point of testing, the resistance to rupture is termed the notch toughness.

Fig. 24 shows the stress-strain diagram. Vertical distances indicate the load applied and horizontal distances the strain or elongation which takes place on the application of the load. Up to the point *P*, the elastic limit, the deformation or strain is directly proportional to the load or stress. When the load is removed, the piece returns to its original dimensions. The point *Y*, is the yield point, which represents the load per original cross-section at which a marked increase in the deformation occurs without an increase of load. This point is more commonly determined in testing than the elastic limit, and is sometimes loosely called the elastic limit. The load at the point *M* is the maximum tensile strength, or more commonly the tensile strength. After this load is reached, the stress falls off and rupture takes place at *R*. The horizontal distance from *O* to *X* is the strain of elongation, corresponding to the maximum tensile strength, and is expressed as already stated as a percentage of the original length of the test piece.

Significance of Grain Size

As stated in Chapter II, the grain size has an important bearing on the physical properties. In general the finer the grain the better the physical properties. Much of the heat treatment of pearlitic steel therefore is directed to obtaining this fine grain (normalizing). In the use of hardened steel, (martensite), the grain structure also is important. While the steel may be hardened by quenching from any temperature above the critical range, the high quenching temperatures lead to poor properties in that they cause large grain size. Therefore, the obtaining of proper grain size in this instance also is of vital importance. Hence before considering the effect of the constituents of steel on the physical properties, the subject of grain size must be discussed.

In Fig. 25 a diagram is shown in which the relation of temperature to grain size in eutectoid steel (0.9 per cent carbon) is set forth after H. M. Howe. During the cooling of the steel from a molten condition, a certain size of austenite grain will be formed which on reaching the temperature indicated by the point *G*, will be expressed by the dimension *a*. The size of this grain is determined by the rapidity of cooling through the freezing range. From the point *G*, it cools to room temperature without any change in size, as there is no change in grain size on cooling when no plastic deformation takes place such as occurs in hot rolling or hammering or by cold work. When the steel cools through the Ar_1 point, the austenite changes to pearlite, but the pearlite grains have the same size as the original austenite grains. If now the piece of steel be reheated again, no change takes place until the point *N* (Ac_1) is reached, when the pearlite is transformed into austenite again, but with the birth of new grain of the size indicated at *J*, or the dimension *c*. This is the minimum grain size of the steel that is possible, and the steel is said to have been heat refined. In order for the minimum grain size to form, time must be given, that is, the steel must be held for an appreciable time just above the critical point, the time varying with the size of the piece. This grain size will be preserved if the steel is rapidly cooled in air from just above the temperature *J*, the critical point. If, however, heating be continued above *J*, the austenite grain formed will again grow along the curve *JDG*. If heated to a temperature indicated by the point *D*, and then cooled, it will have the size expressed by the point *P*, or the dimension *b*, at room temperature. If the steel be heated, instead of to *D*, to the point *G*, it will again attain the size measured by the dimension *a*, that is, its original grain size. It can, therefore, be said that a steel will have a grain size which is the larger, the higher the temperature from which it has cooled. There is no change in grain size on cooling, but a growth of grain on heating above the critical point. To obtain the minimum grain size for an eutectoid steel, it must be heated to just above the critical point for a sufficient length of time for equilibrium to take place, and then cooled fairly rapidly in air.

Fig. 27 is a diagram showing the relation of temperature and grain size for a hypoeutectoid steel, that is, one containing less than 0.9 per cent carbon. Such a steel consists, in the slowly cooled state, of a mesh of pearlite and

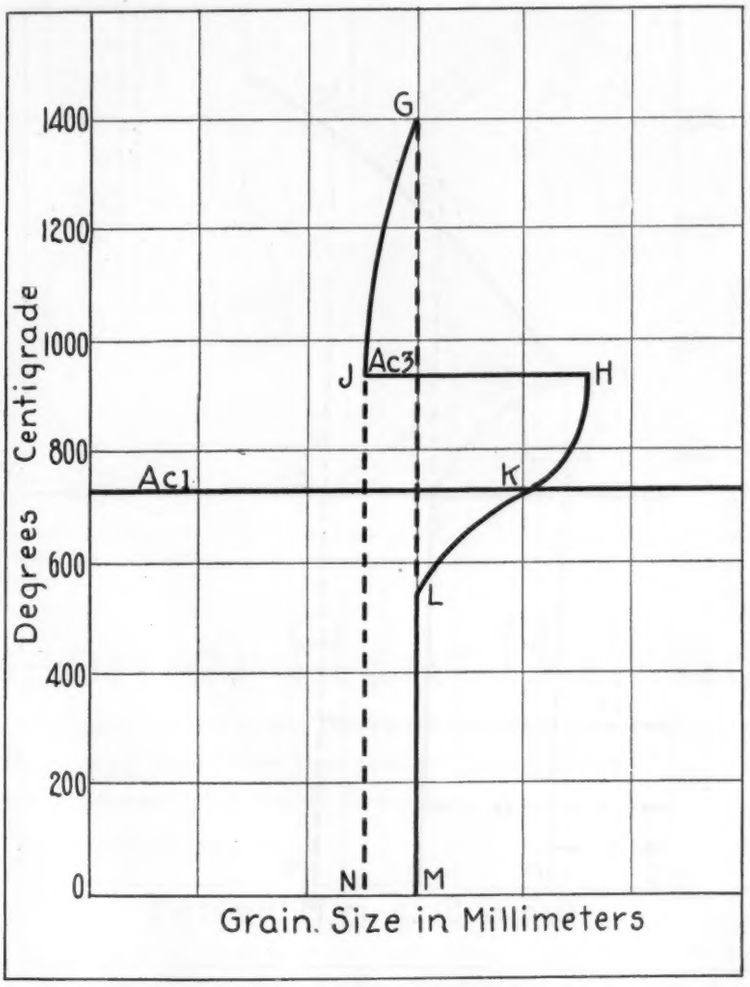


FIG. 26—GRAIN GROWTH OF VERY LOW CARBON METAL (COLD WORKED)

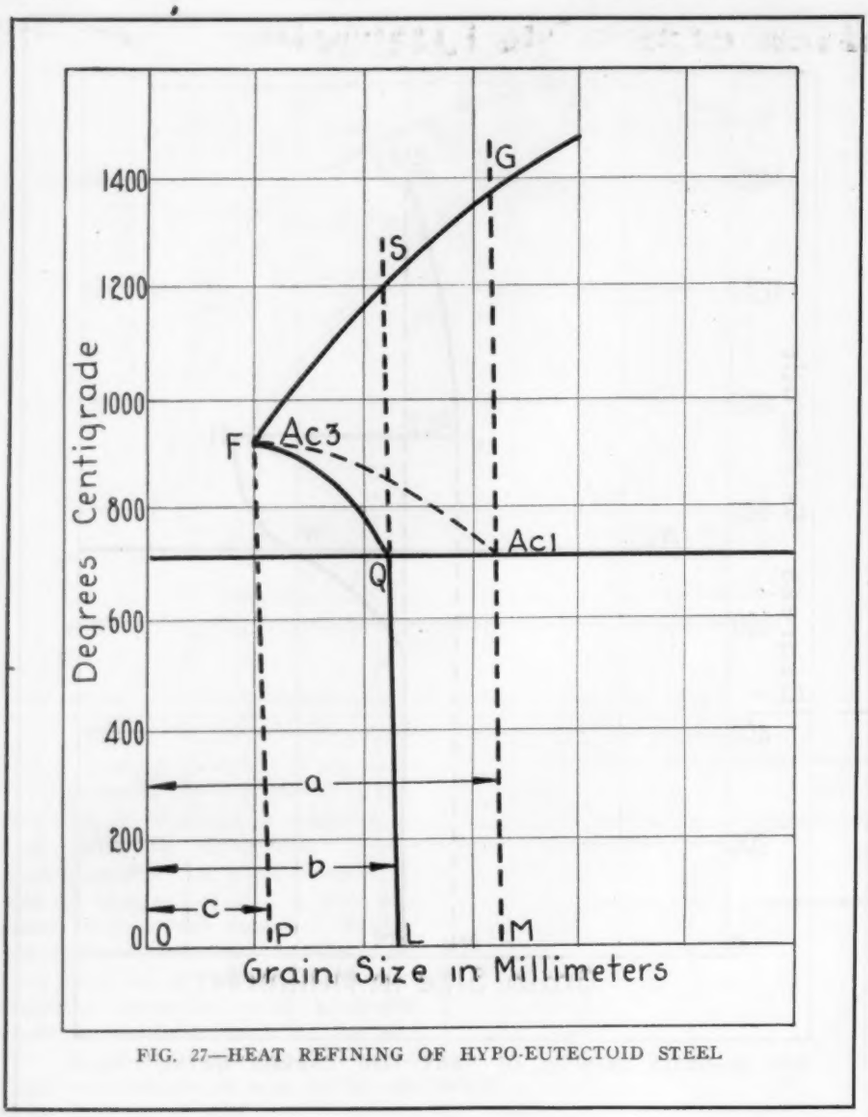


FIG. 27—HEAT REFINING OF HYPO-EUTECTOID STEEL

a network of excess ferrite as described in Chapter II. If such a steel be cooled from a high temperature, it will have a grain size corresponding to the temperature, just as described for an eutectoid steel in Fig. 25. If cooled from a temperature indicated by the point *G*, it will at room temperature, have a grain size expressed by the dimension *a*, at the point *M*. If it now be heated no change in grain size will occur, until the critical point Ac_1 is reached, when the pearlite will be changed to austenite of the hardenite composition, with the birth of a new grain. However, the old ferrite network still remains, since this was formed in the cooling through the critical range, that is, from Ar_3 to Ar_1 so that in this case, unlike in the eutectoid steel, no completely new structure is formed at Ac_1 but remnants of the old structure remain. If the heating be now continued, the ferrite network will be absorbed into the newly formed austenite grain, the absorption being complete as the upper critical point Ac_3 is passed at *F*, when the minimum grain size for this steel is obtained as indicated by the dimension *c*. If heating be continued, the grain will grow again just as in the case of the eutectoid steel, and when for example 1200 degrees Cent., (2192 degrees Fahr.) is reached, will have a size indicated by the point *S*, or the dimension *b*. This in cooling to room temperature will not change, as there is no change in grain size in cooling. If it be again reheated, there will be no change in grain size until the point *Q* (Ac_1) is passed when the pearlite is changed to austenite of hardenite composition as before, and on further heating, the excess ferrite is absorbed along *OF* as the temperature rises the absorption being complete when *F*, or Ac_3 is passed, when the grain size will again be the minimum as indicated by the dimension *c*. The upper critical point of course, varies in position with the carbon content as is evident from an inspection of the iron-carbon diagram of Chapter II, where the curve *GOS* marks the position of the critical points with varying carbon content. In the heat refining or normalizing of a hypoeutectoid steel, therefore, it is not enough to heat to the Ac_1 point, but the Ac_3 point must be reached and slightly passed. For hypereuctectoid steels, that is, those with more than 0.9 per cent carbon, the conditions are similar. For the complete absorption of the excess cementite a temperature must be reached, indicated by the point where the composition line of the steel cuts the curve *SE* of the iron carbon diagram, in Chapter II. However, for high carbon steels, this temperature is relatively high, which means a relatively large grain in itself, and in heat refining such a steel, complete absorption of the excess cemenite is not usually aimed at for this reason. The underlying fundamental reason for the change of grain size on heating through the critical range is, of course, to be found in the profound change which occurs in structure in passing through the critical points.

Control of Grain Size

When an alloy of very low carbon content is considered, that is, 0.04 per cent carbon or below, we practically deal with the pure metal iron, and the conditions governing grain growth are somewhat different as has been explained in Chapter II. Fig. 26 illustrates the relation between grain size and temperature in low carbon metal. If such an alloy is cooled from the molten condition the grain size is determined as before by the rate of cooling through the freezing range, rapid cooling giving a small grain and slow cooling a large grain. If such a metal be hot worked above its equi-axing temperature, the grain will be broken up and a fine grain results, which will be permanent if the last work is done near the equi-axing temperature. Assuming such a metal to have the grain size indicated by the point *N*, there will be no change on heating until the point *J*, Ac_3 is reached when on further heating there will be a slight growth of grain size toward the point *G*. If now the metal be allowed to cool rapidly, it will have at room temperature a grain size indicated by the point *M*. If now the metal, be cold worked to a considerable degree by hammering or rolling, which ruptures the grains and produces amorphous metal, and then reheated, grain growth will start at the temperature of the point *L*, somewhat above 500 degrees Cent., (932 degrees Fahr.) and continue in heating through the range *LKH*, giving rise to very large grain size if the heating is slow through this range and the metal has been severely cold worked. When the temperature indicated by the point *H*, Ac_3 is reached, the alpha and beta iron is transformed into gamma iron with the birth of a new and smaller grain, but

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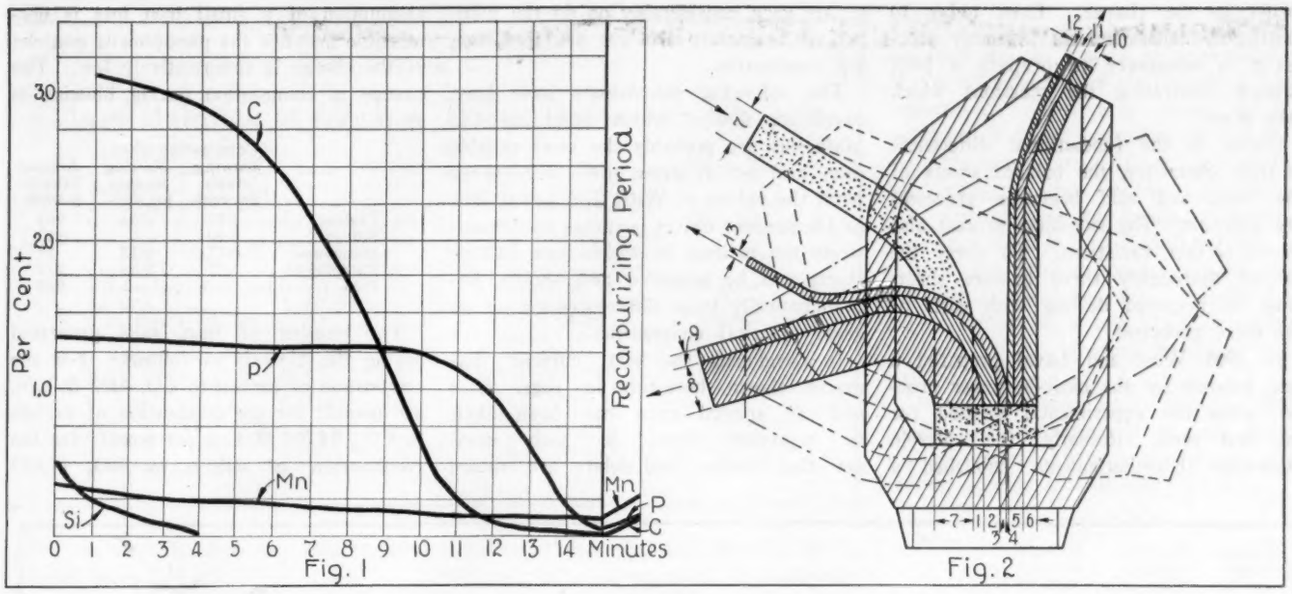


Fig. 1—Reactions during a basic-bessemer heat. Fig. 2—Heat current diagram of a basic-bessemer heat (see Table I)

Deriving Bessemer Heat Balance

In Accounting for Distribution of Heat in Converter, Separate Balance Sheet Must Be Prepared for Acid, Basic and Side-blow Processes—Constructing Heat Current Diagrams—Chemical Reactions

BY HUBERT HERMANNS

THE bessemer process differs from others used for making mild steel in that the entire amount of heat required for the conversion of the pig iron is obtained from the reaction itself. To arrive at a proper appreciation of the great value of Sir Henry Bessemer's invention it is necessary to recall the point of view of metallurgists at the time he lived. The iron and steel experts of that day were unable to grasp the revolutionary ideas which Bessemer promulgated. They thought the pig iron would freeze in the converter. They had no conception of the amount of heat liberated by the combination of the oxygen of the air with the combustible ele-

From a paper read at the annual meeting of the German Foundrymen's association, Hamburg, Aug. 19-23, 1923. The author is consulting engineer and Berlin correspondent of IRON TRADE REVIEW.

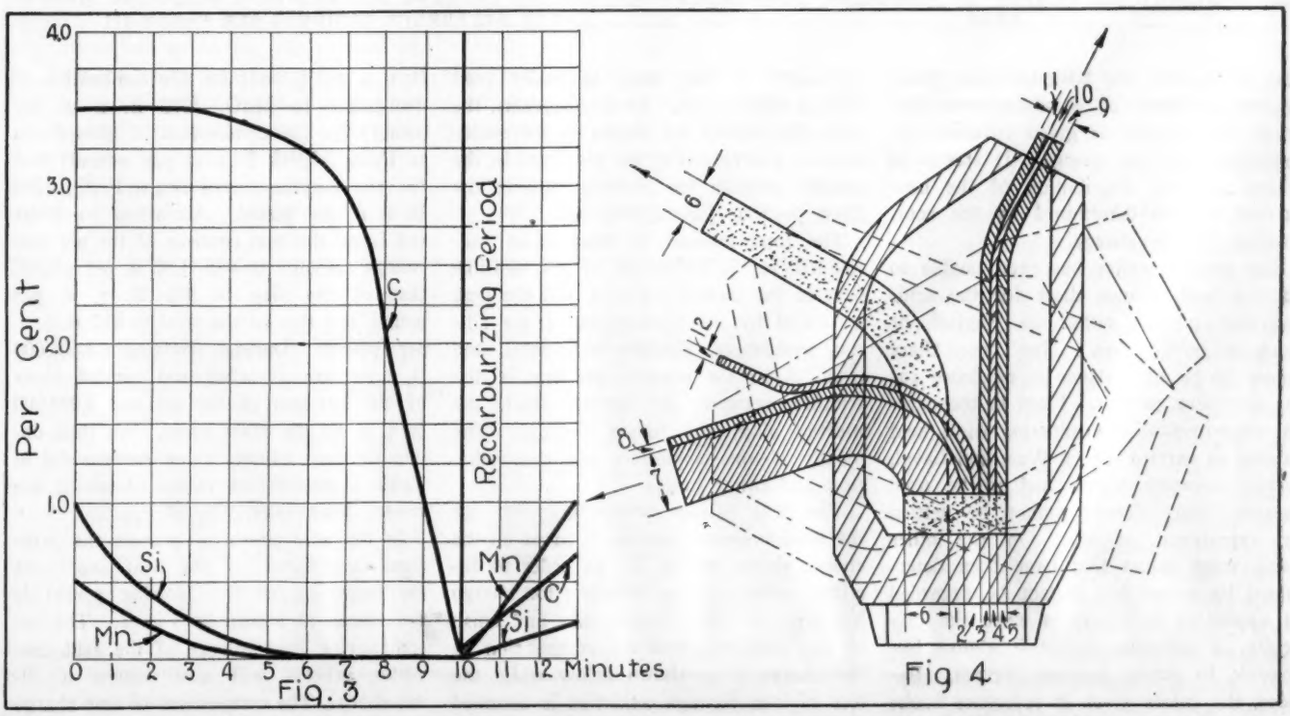


FIG. 3—REACTIONS DURING AN ACID-BESSEMER HEAT. FIG. 4—DIAGRAM OF ACID-BESSEMER HEAT (SEE TABLE II)

ments in the charge. Even today to thoroughly understand the bessemer process it is necessary to prepare a heat balance illustrating the reactions which take place.

Owing to the fundamental differences in their chemistry, the balance sheets of the basic and acid bessemer processes are different. The side-blow process also shows certain variations. To cover the subject thoroughly three balance sheets must be prepared dealing with each of the three processes.

In 1908 Wust and Laval prepared a heat balance for the basic-bessemer process using the experimental method for the first time. Recently the Verein Deutscher Eisenhuttenleute published a heat balance for the basic-bessemer process, in the form of a heat-current diagram, but no data is given covering the constituents of the charge. It stands to reason that the distribution of the heat current will be determined by the composition of the charge.

The present writer has been unable to trace a heat balance sheet for the acid-bessemer process either in English or German publications. Nor does there appear to be any balance in existence for the side-blow process. Even in the careful experimental determination of a heat balance as carried out by Wust and Laval, certain assumed values had to be used because many details cannot be settled by experiment at all. On the other hand, some values that have been determined by actual test cannot be regarded as applicable to all cases since the difficulty of sampling makes it almost impossible to obtain accurate figures. Besides, the values given in reference books for the specific heats of the various materials vary considerably as do the number of heat units that are produced during combustion.

The following calculations have been based on figures which according to Mathesius are probably the most reliable ones and which show some differences from the values of Wust and Laval. But as the present object is rather to demonstrate the manner in which heat balance sheets can be prepared and shown diagrammatically these differences are of no great practical consequence.

In developing the heat current diagrams shown herewith in Figs. 2, 4 and 6, special care has been taken to represent them in such manner that credits and debits are shown separately so they may be easily read without explanation. In the diagrams, the converter vessels are shown in the center position for receiving the pig iron, in the upright position for blowing, and in the tilted position for tapping out.

The total amount of heat to be accounted for is composed of the sensible heat of the molten pig iron, and the heat generated by the combustion of the silicon, manganese, phosphorus, carbon, and iron. After the reaction the heat is distributed between the molten steel, the molten slag, the losses through the mouth of the converter, and the radiation and other losses.

The heat balance shown herewith for the basic-bessemer process is based on the charge shown in Fig. 1. In order to facilitate calculations a 10 metric ton charge has been selected. At the start and finish of the blowing period the composition of the charge is as shown below while the loss of iron through oxidation is assumed to be 990 pounds or 4.5 per cent. The assumption of a small iron loss is permissible because the phosphorus content of the charge is comparatively low. The change in composition during blowing is as follows:

	Composition when Blowing starts per cent	Blowing finishes per cent	Amount oxidized pounds
Carbon	3.20	0.01	702
Silicon	0.50	...	110
Manganese ...	0.37	0.12	55
Phosphorus ...	1.37	0.03	295
Iron	...	...	990

The number of heat units generated during the blow is as follows: For the combustion of carbon to CO, 4397 B. t. u. per pound; for the combustion of carbon to CO_2, 14,705 B. t. u. per pound; for the combustion of silicon to SiO_2 11,823 B. t. u. per pound; for the combustion of manganese to MnO, 3018 B. t. u. per pound; for the combustion of phosphorus to P_2O_5, 10,945 B. t. u. per pound; and for the combustion of iron to Fe_2O_3, 3276 B. t. u. per pound. According to Wust and Laval the heat contents of the pig iron charge amounts to 491 B. t. u. per pound, that of the slag to 976 B. t. u. per pound, and that of the steel to 612 B. t. u. per pound. During heating 3,600,000 B. t. u. are absorbed and carried away by the nitrogen of the air and 2,000,000 B. t. u. by the other gases. We thus obtain the heat balance sheet summarized in Table I the various values of which are shown diagrammatically in Fig. 2.

In the acid converter process the principal contributor of the heat supply at the beginning of the blowing period is the silicon as shown by Fig. 3. The accompanying heat balance of the acid converter process will also assume a 10-ton charge. The composition of this charge at the beginning and end of the blowing

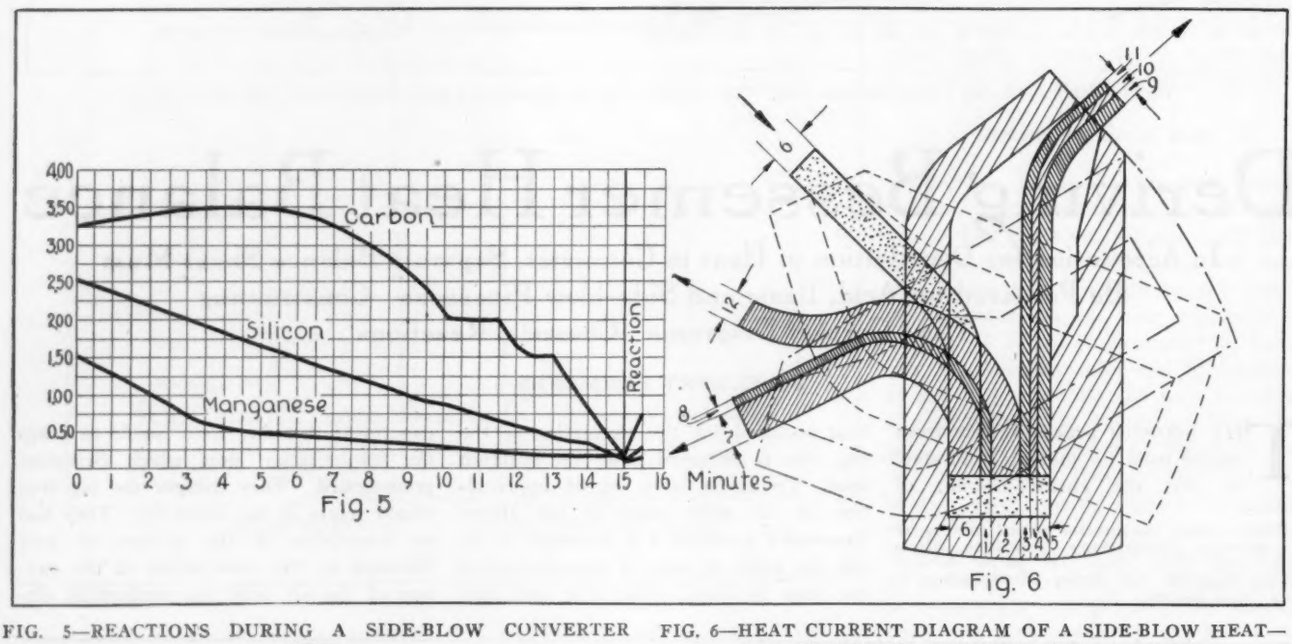


FIG. 5—REACTIONS DURING A SIDE-BLOW CONVERTER HEAT

FIG. 6—HEAT CURRENT DIAGRAM OF A SIDE-BLOW HEAT—FOR REFERENCE NUMBERS SEE TABLE III

Table I

Heat Balance of 10-Ton Basic Bessemer Charge

Ref. on Fig.	Credits	B.t.u.	Per cent
1	Combustion of C to form CO (396 pounds)	1,741,212	6.9
2	Combustion of C to form CO_2 (306 pounds)	4,499,730	17.4
3	Combustion of Si to to SiO_2	1,300,530	5.1
4	Combustion of Mn to form Mno	165,990	0.7
5	Combustion of P to form P_2O_5	3,228,775	13.2
6	Combustion of Fe to form Fe_2O_3	3,243,240	13.4
	Heat contents of the molten iron	10,824,586	43.3
	Total credits	25,004,063	100.0

Ref. on Fig. 2	Debits	B.t.u	Per cent
8	Heat contents of the steel (20,020 pounds)	12,252,240	49.0
9	Heat contents of the slag (4620 pounds)	4,509,120	18.0
10	Carried away by the nitrogen of the air	3,600,000	14.4
11	Consumed for dissociating water	1,000,000	4.0
12	Carried away by other gases	2,000,000	8.0
13	Radiation losses	1,642,003	6.6
	Total debits	25,004,063	100.0

period corresponds with the values summarized below:

	Composition of the bath when Blowing starts per cent	Blowing finishes per cent	Amount oxidized pounds
Carbon	3.50	0.07	755
Silicon	1.00	...	220
Manganese	0.50	...	110
Iron	...	...	440

Assuming the same heat contents for pig iron, slag, and steel as in the case of the basic charge we obtain the heat balance shown in table II and Fig. 4.

In the Side-Blow Converter

As indicated by Fig. 5, the reactions in the case of the side-blow converter appear to be considerably different from those in the large vessel, although chemically the result is practically the same. The difference is caused mainly by the long time required for blowing, which is due to the fact that the air blast doesn't completely stir up the bath as in a large converter. Instead it merely starts a slow movement by hitting the surface of the bath in an oblique direction. Obviously under these conditions it takes time for the oxidizing constituents of the bath to reach the surface and come into contact with the oxygen of the air. On account of the slow development of temperature in the side blow process, due to the delayed combustion of the constituents, a charge of different composition from that for large converters is required. The silicon must be high not only to keep the bath at a high temperature but also to raise the temperature until the combustion of the carbon starts. The manganese, owing to its lower heat content and slow combustion, does not play an important part. On the other hand the extended blowing period is responsible for appreciable heat losses through radiation and the heating of large volumes of the nitrogen in the air blast to a high temperature. This also results in the oxidation of larger quantities of iron than in large converters. Hence, as regards heat economy, the side-blow process is less efficient than the ordinary bottom-blow system. It should be possible to shorten the blowing period by allowing the blast to enter the bath from the side, but as far as the writer is aware, no experiments in this direction have ever been tried.

On the assumption of a charge of 2020 pounds, the constituents of the bath shown will be changed in the course of the converting process as follows:

	Composition of the bath when Blowing starts per cent	Blowing finishes per cent	Amount oxidized pounds
Carbon	3.25	0.20	67
Silicon	2.50	0.10	53
Manganese	1.50	0.15	30
Iron	...	...	165

From the foregoing reactions the heat balance shown in Table III and in Fig. 6 is obtained for the side blow process.

Table II

Heat Balance of 10-Ton Acid Bessemer Charge

Ref. on Fig. 4	Credits	Sheet B.t.u.	Per cent
1	Combustion of C to form CO (418 pounds)	1,837,946	8.2
2	Combustion of C to form CO_2 (337 pounds)	4,955,585	22.3
3	Combustion of Si to form SiO_2	2,601,060	11.8
4	Combustion of Mn to form Mn O	331,980	1.5
5	Combustion of Fe to form Fe_2O_3	1,441,440	6.5
6	Heat contents of molten iron	10,824,586	49.7
	Total credits	21,992,597	100.0

Ref. on Fig. 4	Debits	B.t.u.	Per cent
7	Heat contents of the steel (20,460 pounds)	12,521,520	56.9
8	Heat contents of the slag (1760 pounds)	1,717,760	7.7
9	Carried away by the nitrogen of the air.	3,200,000	14.6
10	Consumed for dissociating water	920,000	4.1
11	Carried away by other gases	2,000,000	9.1
12	Radiation losses	1,633,317	7.6
	Total debits	21,992,597	100.0

Table III

Heat Balance of 2020-pound Side-blow Converter Charge

Ref. on Fig. 6	Credits	B.t.u.	Per cent
1	Combustion of C to form CO (37 pounds)	152,689	5.6
2	Combustion of C to form CO_2 (30 pounds)	441,150	14.7
3	Combustion of Si to form SiO_2	626,619	21.0
4	Combustion of Mn to form MnO	90,540	3.0
5	Combustion of Fe to form Fe_2O_3	540,540	18.2
6	Heat contents of molten iron	991,820	37.5
	Total credits	2,842,858	100.0

Ref. on Fig. 6	Debits	B.t.u.	Per cent
7	Heat contents of the steel (1870 pounds)	1,124,440	38.6
8	Heat contents of the slag (198 pounds)	193,248	6.5
9	Carried away by the nitrogen of the air.	400,000	13.6
10	Consumed for dissociating water	160,000	5.4
11	Carried away by other gases	240,000	8.1
12	Radiation losses	725,770	27.8
	Total debits	2,842,858	100.0

Negro Migrants 478,700 in 12 Months

The secretary of labor announces through Phil H. Brown, commissioner of conciliation, specially detailed to observe the present movement of migratory negro labor, that 478,700 negro migrants forsook their abodes and occupations in 13 southern states during the year Sept. 1, 1922, to Aug. 31, 1923. This conclusion is based on a series of figures submitted by state, municipal and civic statisticians and authorities of the southern states. Alabama yielded 90,000; Arkansas, 5000; Florida, 90,000; Georgia, 120,600; Kentucky, 2500; Louisian , 15,000; Mississippi, 82,600; North Carolina, 25,000; Oklahoma, 1000; South Carolina, 25,000; Tennessee, 10,000; Texas, 2000; and Virginia, 100,000.

Roller Leveling Sheets Before Fabricating

High-grade sheets for automobiles are passed through a roller leveling machine after the finishing and annealing processes for the purpose of rendering the surface flat and smooth. The leveling machine is equipped with highly polished, high-carbon steel rolls usually about 17. These are arranged in a staggered position. By this construction the sheet as it passes between the rolls travels in a wave-lake manner until it reaches the end of the machine where it passes horizontally between one or two sets of rolls which remove any visible streaks or series of depressions.

Where a high finish is necessary, such as is the case when the stock is to be japanned or enameled, the sheet is stretcher leveled. Both ends of the sheet are clamped in a drawing bed and by the application of hydraulic pressure the steel is stretched with the result that any slight buckles that remain on the surface after the roller leveling process, are absorbed.

Automobile body builders find, however, that while buckles are removed at the mill by the roller and stretcher leveling processes stretcher strains appear on the surface after the sheet is formed and japanned. Research discloses that while the leveling process actually separates the molecules in the steel and makes them assume new locations, thereby removing the series of depressions, yet after a few hours the molecules work back to their original position or in close proximity thereto, being aided in their movement by amorphous material in the metal acting as a lubricant.

According to the investigation conducted by one large automobile body builder in this country it was found that the molecules start to move back to their original position about eight hours after the sheet is roller leveled. In other words the streaks on the surface of the sheet are removed by the leveling processes at the mill but by the time the steel arrives at the fabricator's plant stretcher strains will be present. As a result, therefore, many automobile body builders are installing roller leveling machines through which the sheets are passed just prior to subjecting them to the stamping or forming operation.

The best results, according to practice at one plant, are obtained by forming the sheet about one hour after it is roller leveled although results are satisfactory up until eight hours afterward depending upon the amount of stretching to which the sheet has been subjected. Leveling the sheet disrupts the setting or congealing of the amorphous material in the metal and if this is followed by the forming process within the stated period the molecules become widely scattered to the end that the japanning or enameling process fails to bring out any buckles or stretcher strains. This method gradually is displacing the hammering process which is used by a large number of automobile body builders to flatten out strain marks.

Henry Marion Howe Medal Is Awarded

ONE of the features of the banquet held during the convention of the American Society for Steel Treating last month in Pittsburgh was the presentation of the first Henry Marion Howe medal. This medal, which was established by the board of directors of the society shortly after the death of Doctor Howe who was an honorary member, is to be awarded to the author of the paper published in the *Transactions* of the society and judged to be of the highest merit. The competition is open to all but the award may be withheld at the discretion of the board of directors. Both the front and reverse sides of this medal are shown in the accompanying illustrations.

The first award, that for 1922, was made to Emanuel J. Janitzky, for a paper entitled "Influence of Mass in Heat Treatment." Mr. Janitzky is metallurgical engineer, Illinois Steel Co., Chicago, and is a frequent contributor to metallurgical literature. Just preceding the award of the medal to Mr. Janitzky, a bronze medal, the first to be struck from the die, was presented to Mrs. Henry Marion Howe, widow of Doctor Howe. The presentations were made by T. D. Lynch, president of the American Society for Steel Treating.

Front and Reverse Sides of Henry Marion Howe Medal

Following a meeting of the board of directors of the society early in November, it was announced that no award of the medal would be made for 1923. The medal was designed and struck by the R. Wallace & Sons Mfg. Co., Wallingford, Conn., and preparation of the model and cutting of the dies was done by the Keller Mechanical Engineering Corp., Brooklyn, N. Y.

New Oil Tank Roof Affords Fire Protection

As a means of reducing the fire hazard in oil storage tanks, the Chicago Bridge & Iron Works, Chicago, is introducing a floating type tank roof which is designed to float on the surface of the oil, thereby eliminating the air space between the oil and the top. The float consists of a blanket of steel 3/16 inch thick and having a diameter 1 foot less than the diameter of the tank. It is electrically welded and has sufficient trussing to maintain the cross section of the roof in a straight line. The roof and sides of the tank are joined by a seal consisting of a shoe, a horizontal, a flexible, gas-tight, fireproof material, a spring pressed plunger and curved hangers.

Having the same curvature as the tank and being leveled to ride over plates and rivets, the shoe affords close contact with the tank shell for a vertical distance of about 24 inches. Hangers from the shoe are used to support the floating roof and are so arranged that the weight of the seal throws itself positively against the tank. As the shoe comes closer to the roof than its normal distance, it engages a spring pressed plunger which aids gravity in pushing the seal against the center of the tank. The flexible material between the seal and the rim

of the float is built up of two layers of wire inserted asbestos cloth cemented together with heavy thicknesses of canvas on the outside. The canvas which is on the weather side is treated with hot asphalt before application.

This construction gives the effect of a flexible steel shell which at all times is kept in close contact with the shell of the tank and follows any irregularities. Several self-closing openings placed in the rim of the roof vent the exceedingly small gas-tight space between the shoe and the rim. To determine the effectiveness of this type of roof against fire, a number of tests were conducted recently on a tank 30 feet in diameter and 6 feet high. A number of fire tests were tried in quick succession, the results being satisfactory in every respect.

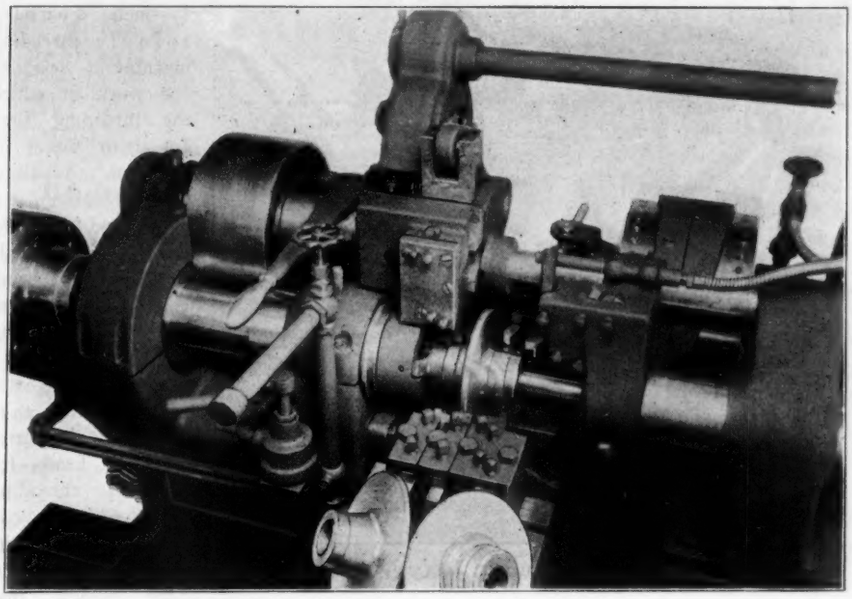
Designs New Automatic Hub Machine

For machining second operation work on arbors, such as bevel gears, bevel gear housings, pinion gear shifts and transmission gears, the Cleveland Automatic Machine Co., Cleveland, recently has introduced an automatic hub machine. This machine is similar in action to the piston machine made by the same company. A view of the hub machine is shown in the accompanying illustration.

The hub on an arbor is chucked by means of a hand-operated air chucking mechanism. The arbor is supported on the other end by a roller bearing and the tailstock spindle and is driven by a boss in the spindle hood engaging in the lug on the arbor. The tool operations follow rapidly, working simultaneously.

The overhanging arm mounted on the tool chuck spindle and supported rigidly in the rear carries three cutters. The work of these cutters is divided: the first turns the flange diameter while the other two rough-turn the small diameter and face one end. The overhead turning attachment mounted on the spindle and operated longitudinally from a cam on the camshaft carries two cutters which rough-turn the other small end. Three cutters in blocks mounted on the rear cross-slide rough-face the flange and rough-form and face one end. Four cutters mounted on the front cross-slide finish-form both ends and finish-face the front flange.

A hub is produced in each cycle of the camshaft. The machine is driven from a single pulley with a clutch which automatically stops the machine when each hub is completed.



HUB MACHINE IS EQUIPPED WITH HAND OPERATED AIR CHUCKING DEVICE

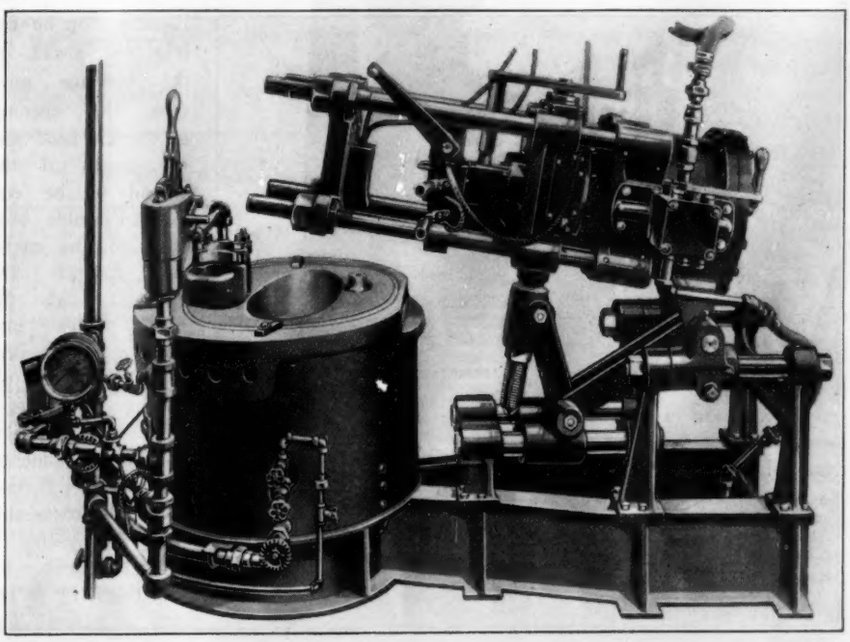
The lever for starting the machine as well as the air control lever are within easy reach of the operator. The machine is arranged for either belt or motor drive.

Builds New Type of Die Casting Machine

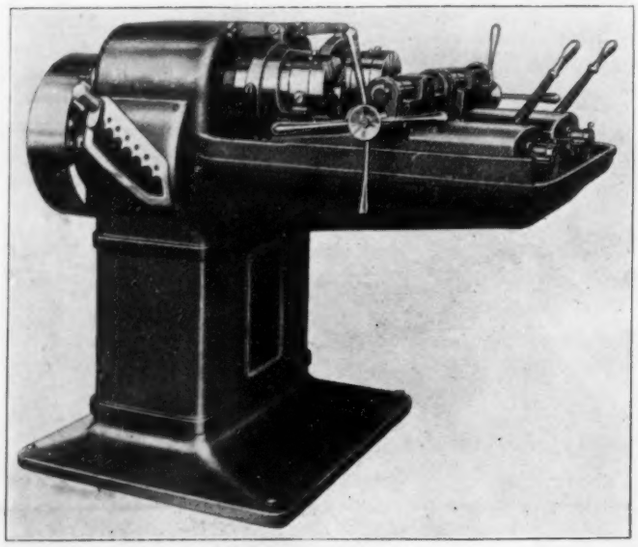
A new die casting machine recently has been designed and placed on the market by Edgar N. Dollin, 6 Church street, New York. This machine, a view of which is shown in the accompanying illustration, is expected to meet the demand of large manufacturers both here and abroad.

This machine, it is claimed, has shown a high production capacity under test, running well over 200 operations per hour on long run jobs. One advantage claimed is the fact that the equipment is interchangeable as to alloys. It has been shown possible to produce aluminum castings with a high efficiency, and to change to zinc, tin and lead alloys with equal efficiency. The machine reduces the manual labor of the operator, the opening and closing of the dies and the shooting of the metal being accomplished entirely by mechanical power. In addition ample power is provided to pull cores and slides. The machines are operated entirely by two valves.

The diameter of the die carriage cylinder is 14 inches, developing 30,787 pounds



DIE CASTING MACHINE WHICH IN OPERATION HAS RUN OVER 200 OPERATIONS PER HOUR



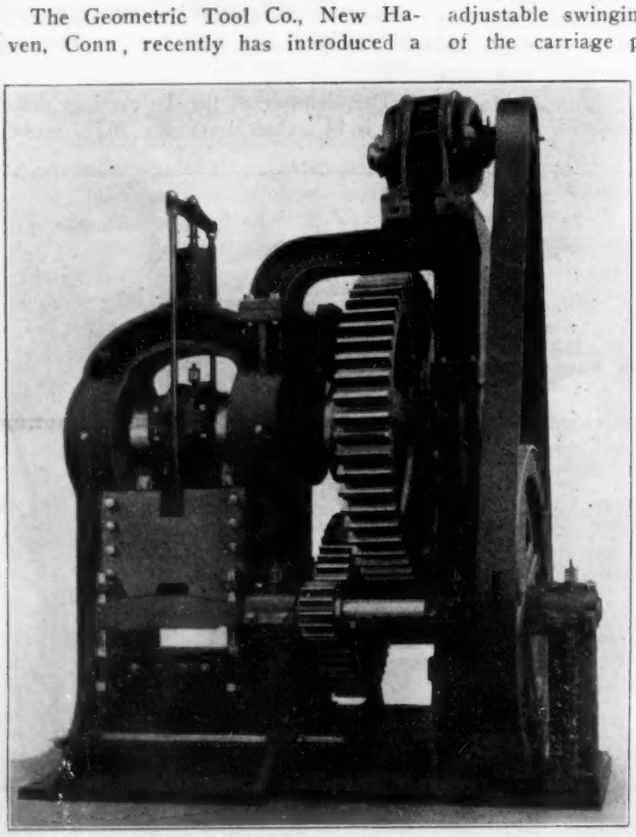
THREADING MACHINE SHOWING MANY COMBINATIONS

of pressure at 200 pounds per square inch. The cylinder is fitted with a special supplementary lock for dies requiring greater pressure. A stationary vertical goose neck is integral with the pot and air operated. The capacity of the pot is approximately 1000 cubic inches. A special valve controls the die carriage and another regulates the goose neck. Fuel oil or gas can be used, depending upon the available fuel.

Large Machine To Handle Special Thread Cutting

The Geometric Tool Co., New Haven, Conn, recently has introduced a 1½-inch double-spindle threading machine designed for work in which the threading time for both pieces is sufficient to allow the operator to chuck and start the second piece while the first is being completed. A number of threading combinations are possible with this machine. Both spindles may be fitted with die heads for external threading only, or with collapsing taps for internal threading. One spindle may carry a die head and the other a tap for the handling of such work as requiring both an internal and external thread.

The bed of the machine consists of a substantial casting and carries two spindles which are mounted in large bronze bearings. The spindles are driven by a single pulley located in the rear of the machine, but can be driven independently by either of the change gear levers located at the side of the machine. Each carriage is fitted with a two-jawed chuck which is operated by a hand wheel. An adjustable swinging gage on the side of the carriage provides an accurate means of setting the work for a predetermined length of thread. An adjustable stop on the trip rod ahead of the carriage governs the opening in the die head and the length of the thread to be cut. An adjustable stop back of the carriage controls the closing of the die head. This machine will cut threads of the following diameters: ¾, ⅞, 1, 1⅛, 1¼, 1⅜ and 1½ inches. The greatest cutting length obtainable with one setting is 9 inches and with resettings 14 inches may be secured. The machine is fitted for motor drive with a 6-horsepower motor.



SHEAR HAVING AUTOMATIC STOP FOR OPERATING CLUTCH

Make Changes in Design of Guillotine Shears

Changes in design recently have been made in the line of shears of the guillotine type manufactured by the Long & Allstatter Co., Hamilton, O. The object in making the changes was to obtain a rugged machine for shearing off square, round or flat bars under present-day production service.

The main frame of the housing is made of a one-piece casting of the box type, the material on the large machines being annealed steel. On the small machines semi-steel is used. The steel slides are long, sliding in bronze lined bearings and are counterbalanced by air springs or weights operating below the floor level.

The gears are of steel and are placed on the side of the machine to give unobstructed working room around the back, side and front of the machine. An automatic stop is provided for operating the clutch which brings the slide to rest with the blades completely open. A safety locking feature also is used so that the clutch will engage the driving jaws only when the operating treadle is completely down. The machine can be stopped after each stroke or can be run continuously if so desired.

The flywheels are sufficiently heavy to relieve the motors of the high peak loads. The machines are self-contained, the bearings and all other parts being supported by a common base. A range of sizes for cutting off 1½-inch square to 7-inch square cold steel is to be manufactured. A view of the new type of machine is shown in the accompanying illustration.

Warns Against Abuse of Blast Furnace

In a lecture on refractories Prof. W. J. Rees, of the University of Sheffield, England, recently called attention to the deleterious effect of adding salt to blast-furnace charges to increase the production of potash. Professor Rees said that the crystal growth which results has frequently led to the destruction of the furnace lining. In dealing with silica brick the lecturer drew attention to the great importance of careful handling at the critical temperature of 575 degrees Cent. Many structures, he also said, have collapsed as a result of careless heating at the critical range around 240 degrees. The life of a furnace lining, said Professor Rees, should not be measured by days, weeks, or even by heats. The only sound basis, he declared, is the cost of refractories per ton of salable product.

Chemical Engineers Plan Meeting at Washington

Papers to be presented at the annual meeting of the American Institute of Chemical Engineers, to be held at Washington, Dec. 5-8, will treat in the main with the relations of the geological survey, bureau of mines, bureau of standards and other government departments with chemical engineering and the chemical industry as a whole. Several inspection trips are planned to industrial plants and department of interior laboratories. Headquarters of the society during the convention will be at the New Willard hotel. The program in part is as follows:

WEDNESDAY, DEC. 5

Morning Session

Meeting at New Willard Hotel

Symposium on work of the bureau of mines. "The Relations of the Geological Survey to Chemical Engineering," by Dr. George Otis Smith, director of the geological survey; "The Relation of the Bureau of Mines to Chemical Engineering," by H. Foster Bain, director of the bureau of mines; "The Physical Properties and Combustibility of Coke in Relation to Its Production and Use," by A. C. Fieldner; "The Relation of the Chemical Work of the Bureau of Mines to Chemical Engineering," by S. C. Lind; "Testing the Explosives for Governmental and Commercial Use," by J. W. Paul; "Research on Petroleum," by H. H. Hill; "Some Aspects of the Application of Oxygen to the Metallurgical and Allied Fields," by F. W. Davis.

Afternoon Session

Luncheon at the New Ebbitt hotel.

Visit to the cryogenic laboratory of the department of interior which is devoted to the study and production of helium. Other laboratories in the department of interior also will be open for inspection.

Evening

Entertainment and dance, Fairfax room, New Willard hotel.

THURSDAY, DEC. 6

Morning

Meeting at Bureau of Standards

Presentation of papers. "The Policies, Problems and Practices of the Bureau of Standards," by G. K. Burgess, direstor of bureau of standards; "The Chemical Work of the Bureau of Standards," by W. F. Hillebrand; "The Industrial Research of the Bureau of Standards," by P. H. Bates; "Automic Physics and Its Relation to Chemical Engineering," by P. D. Foote; "Thermal Research as a Guide to Engineering Practice," by H. C. Dickinson; "Commodity and Raw Material Surveys of the Department of Commerce," by Julius Klein; "The Geophysical Laboratory," by Dr. R. B. Sosman.

Afternoon

Luncheon at the bureau of standards.

Inspection of the bureau of standards.

Inspection of the geophysical laboratory of the Carnegie Institution of Washington.

Evening

Subscription dinner at the New Willard hotel.

FRIDAY, DEC. 7

Morning

Meeting at New Willard hotel

Reading of papers on the relation of agriculture to chemistry.

Afternoon

Luncheon at the New Edditt hotel.

Visit to the laboratories of the department of agriculture.

Evening

Presentation of paper, "Synthetic Ammonia from By-Product Hydrogen," by Charles O. Brown.

SATURDAY, DEC. 8

Inspection of industrial plants. Full details will be given at the time of registration.

The International Harvester Co., Chicago and the International Motor Co., New York plan to build assembling plants in Allston, Mass. The factories will be erected alongside the tracks of the Boston & Albany railroad, each plant to cost about $1,000,000.

Engineers Nominate

William Kelly, mining engineer of Vulcan, Mich., has been nominated as president of the American Institute of Mining and Metallurgical Engineers for 1924. Other nominations are Everette L. Degolyer of New York and Charles W. Merrill of San Francisco have been named as vice president and director. Directors were elected as follows: R. V. Norris, engineer of Wilkes-Barre, Pa.; George Otis Smith, director of the United States geological survey; P. B. Butler, Joplin, Mo.; B. D. Quarrie, Cleveland; L. D. Ricketts, Warren, Ariz.

Tariff Men to Meet

The Southern Tariff association is to meet at Chattanooga, Tenn., Dec. 7 and 8. At this meeting an effort will be made to form a compact organization of the industries of the South to demand a stable tariff policy, and some changes in the present tariff laws will be sought. A strong effort to have a tariff on graphite, mica and other mineral products of the South will be made, as these industries have suffered considerably since going on the free list.

To Hold Winter Meeting

The winter sectional meeting of the American Society for Steel Treating will be held at Rochester, N. Y., on Thursday and Friday, Jan. 31 and Feb. 1, according to an announcement just made by W. H. Eisenman, national secretary of the society. The society has a chapter at Rochester. A number of papers will be announced shortly.

Convention Calendar

Dec. 3-6—American Society of Mechanical Engineers. Annual meeting, New York. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Dec. 3-8—Power and Mechanical Engineering— National Exposition, Grand Central palace, New York. Fred W. Payne and Charles F. Roth, Grand Central palace, New York, are in charge.

Dec. 5-6—National Rivers and Harbors congress, New Willard hotel, Washington. S. A. Thompson, 824 Colorado building, is secretary.

Dec. 5-8—American Institute of Chemical Engineers. Winter meeting, Washington. J. C. Olsen, Polytechnic institute, Brooklyn, N. Y., is secretary.

Dec. 19-21—**Coal Mining Institute of America.** Annual meeting at Pittsburgh.

Jan. 22-25—**Society of Automotive Engineers-** Annual meeting, General Motors building, Detroit.

Jan. 31-Feb. 1—American Society for Steel Treating. Winter sectional meeting, Rochester, N. Y. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Reads Paper In England

Barton R. Shover, consulting engineer, Pittsburgh, has been selected by the American committee serving in connection with the first world power conference which is to be held under the auspices of the British Electrical and Allied Manufacturers' association, Inc., at the British Empire exhibition, Wembley, London, Eng., June 30 to July 12, 1924, to prepare and present a paper entitled "Power in the Steel Mill Industry." The honorable chairman of the American committee is John W. Weeks, secretary of war, and chairman of the federal pawer commission and the general chairman is O. C. Merrill, executive secretary of the federal power commission. Mr. Shover has had wide experience in steel mill electrical applications. He was at one time consulting engineer for the Gary, Ind., plant of the United States Steel Corp., and various other projects in United States and Canada, including the Dominion Iron & Steel Co., Sydney, Nova Scotia, where he was also consulting engineer in ore and coal mining activity.

Heat Treating Principles

(*Concluded from Page* 1486)

not by any means the minimum size possible.

In heating through the range *LKH*, the grain growth is very slow from about 500 to 800 degrees Cent. (1472 degrees Fahr.) but between 800 degrees Cent. and the Ac_3 point it is very rapid. The size of grain formed depends upon the amount of cold work that the piece has been subjected to and the temperature to which it is heated as well as the length of time it is held at this temperature. The minimum grain size for low carbon metal or ingot iron may be obtained by severely cold working and then annealing for a considerable time at a temperature immediately above the equi-axing temperature 500 to 600 degrees Cent., (932 to 1112 degrees Fahr.). In iron, grain growth is very much impeded by the presence of impurities. For example, wrought iron which contains a considerable amount of slag, will not show the grain growth on heating through the region *LKH*, to anywhere near the degree that ingot iron does. The mechanically contained impurity interferes with the growth of the grains. In the same manner the pearlite content of steel acts as a retarding effect on the growth of the ferrite on heating above the equi-axing temperature of the ferrite, and the growth of grain seen in ingot iron is not found in steel, or if present is very slight.

(*To Be Continued*)

Founders Air Business Problems

National Founders Association Supports Mellon Tax Program and Urges Freedom for Railroads—Open Shop More Widely Accepted—Apprenticeships and Foundry Practice Discussed—Officers Are Re-elected for Year

AN UNUSUALLY comprehensive and well balanced program was presented at the twenty-seventh annual convention of the National Founders' association, held at the Hotel Astor, New York, Nov. 21-22. Attention was directed to personnel problems, to technical phases of shop practice and to important political and economic questions affecting the industry.

President Barr in his annual address, published in part in last week's issue, introduced discussion on many of these topics. Later resolutions were adopted endorsing Secretary Mellon's tax reduction program and urging that railroads be allowed to work out their own problems within the latitude provided under existing laws. At present, it was said, there is a marked tendency in this country to restrict and hamper the railroads in the administration of their legitimate and economic activities. Resolutions also were passed providing for an appropriation similar to that of last year for carrying on the association's educational campaign, and for a sum to be used in the work of the National Industrial Conference board. It was urged that there be greater co-operation with the farmer, with whom the "manufacturer has a natural alliance." Sentiment generally stood as opposed to the bonus bill, and in favor of a modification of the existing immigration law, but with due regard, however, to the social aspects involved.

Wider acceptance of the open shop principle was reflected by the reports submitted. Foundries have been practically free from strikes during the past year. According to Commissioner McClintock, strikes have occurred among but six companies, involving 292 molders. In each case the issue was one of closed shop recognition. Of this number four have been settled without compromise in favor of the employer, Mr. McClintock stated, while the remaining two likely will be disposed of shortly with similar results. It was generally conceded that the biggest problem foundrymen now have to face arises not so much from closed shop conditions, as from legislative and political developments.

All executive officers were re-elected for the ensuing year. William H. Barr, president and head of the Lumen Bearing Co., Buffalo, is now entering upon his eleventh term as president of the organization. Charles L. Taylor, of the Taylor & Finn Co., Hartford, Conn., is vice president; J. M. Taylor, Chicago, secretary; and the Chicago Trust Co., treasurer.

A feature of the program was an address by Magnus W. Alexander, of the national conference board, on "What I Saw in Europe." J. Adam Bede was principal speaker at the annual banquet. Considerable regret was expressed over the absence of James A. Emery, counsel for the association whose legal duties made it impossible for him to be present.

An interesting feature at the banquet was a special exhibit of opinions on the open shop principle, this being a symposium of expressions from various presidents of the United States, the entire present cabinet, governors, and others of prominence. This feature, under the title of "The Dawn of a New Day," was prepared by *Industrial Progress,* Washington in co-operation with the National Founders' association and the National Metal Trades association. It was shown by stereopticon, there being 60 lantern slides, and was designed to reflect the widespread approval of the open shop principle by all thinking classes.

Advocates Study of Individual Needs of Workers

THAT close personal relationship between the management and the employes is essential to successful plant operation and is most effectively brought about through the foreman or gang boss was emphasized by several speakers. Commissioner McClintock, who devoted the greater part of this paper to a discussion of this subject, stated that in his opinion a company cannot sell itself to its employes until it first sells itself to the foreman.

Unlike the olden days, he said, when owner and employe worked side by side, knew each other, and shared their joys and sorrows, industry has so grown that management has had to delegate authority. The place in the shop of the owner of other days is now taken by the foreman or gang boss, who to the individual workman is the company.

He stated that many of the various forms of welfare work and profit-sharing plans tried during the past 20 years have been unsatisfactory. Often it is because the welfare director has attempted to win the loyalty and co-operation of the individual worker by going over the head of the foreman and setting himself up as a company benefactor. In other cases, he said, the management has attempted to apply welfare work to the working force collectively, only to be confronted with the comment that if the company has so much money to spend, why not save it and put it into the employes' envelopes on payday.

"I am forced to the conclusion," Mr. McClintock stated, "that the desired degree of co-operation and loyalty on the part of the individual workman will not be had until the management itself undertakes in definite ways to indicate to the workman that it is interested in him as an individual employe, and not as a part of an organization of unknown or unnamed units."

In an address on the same subject, Dr. H. H. Myers, personnel superintendent of the Ohio Brass Co., Mansfield, O., emphasized the need of greater attention to the minor ills of employes. Even where companies have made elaborate provisions for the care of its employes, too often, he said, they think in terms of surgery, instead of medicine. When a man is suffering from some small ailment, he not infrequently is told to see his

family physician, when his case could be speedily and effectively handled at the plant dispensary. Often the employe, being an average man, never goes near an outside doctor, and either comes back or continues to work in an unfit condition, rather than lay off any longer than absolutely necessary so as not to lose his pay.

Speaking of management's attitude toward an employe's personal affairs, Dr. Myer stated that it is unfair for a company to expect a man to go through life always prepared to meet every emergency that may arise. It is a fortunate company, indeed, that never has to turn to outside assistance, he said. All crises are relative. The position of a man in need of $10 is often comparable to that of a company who has to have a much larger sum. He said he believes in many cases the executive officer in charge was too far removed from the early days when he himself may have been "broke." An executive treasures his manufacturing experience, and capitalizes upon it. An executive, he said, should also remember his human experience, for only by so doing will he attain his greatest measure of success.

Discusses Apprentice Problem

Speaking of the imperative character of apprenticeship training Commissioner McClintock said:

"While the old apprenticeship system has been declining the introduction of molding machines, mass production, specialization and the use of semi-skilled workers has enabled the foundry industry to carry on, but we are rapidly reaching, if we have not already reached, a point where skilled journeymen molders are not to be had in the open market. Self interest will induce apprentice training, but many firms will delay action and by so doing pay the penalty of procrastination."

Horace A. Frommelt, educational director the Falk Corp., Milwaukee, outlined the system in effect at the Falk plant. The company employs less than 1000 men, but has enrolled 145 apprentices of which 45 are in the foundry. At present 15 or 20 are on the waiting list. He attributes the company's success in obtaining apprentices largely to having a well organized plan of training to offer. The beginner knows at the start, Mr. Frommelt said, that he will be given a full opportunity to develop, and can see ahead as to along what lines his work will carry him. Mr. Frommelt stated that an apprentice seldom becomes an asset until after the second year.

"Bootlegging Mind Poison" was the subject of a stirring address by Fred R. Marvin, associate editor of the *New York Commercial.* He outlined the efforts taken to create dissention, unrest and class hatred in this country, and traced the movement down to the Communist International and the Red Trade Union International of Russia. Most of this work, he said, is in the form of propaganda carried through radical and "liberal" publications, many of which are subscribed to by American colleges and women's organizations.

"In this country there are 611 publications of this character," Mr. Marvin said, "and of this number, but 73 are printed in the English language. All others, or nearly 550, are printed in other countries and sent to the United States to be read by those whose ignorance of our ways makes them an easy victim to the poison spread in that manner." He appealed to the members of the association to pay more attention to these activities, and to exercise fully their privilege of voting.

Dr. Paul Smith, vice president of the American Motion Picture Corp., and of which President Barr is the head, emphasized the effectiveness of motion pictures as an educational force. He spoke of the plans of his company for propagandizing sound American doctrines and principles, and appealed for the support of the association.

Walter Wood of R. D. Wood & Co., Philadelphia, reviewed briefly his visit to the international foundrymen's convention in Paris. He said that he was particularly interested in what action would be taken regarding "uniform principles" and that a test bar committee had been proposed. He said he believes that after a few more meetings, foreign sellers generally will be willing to definitely guarantee the analysis of iron products for sale in foreign countries.

Open Shop Gains

A gain in the open shop movement was pointed out by Noel Sargent, manager in charge of the open shop department of the American Association of Manufacturers, New York. He reviewed developments of the past four years, and called attention to gains made where labor is especially well organized. In the building trades, he said, organized labor perhaps has its strongest hold, yet a recent survey of activities in 72 leading cities, exclusive of Chicago, shows that 40 per cent of the work is on the open shop principle, as against 10 per cent in 1919.

He presented figures reflecting gains in certain of the bituminous coal fields. These figures brought out a comparison of conditions as they prevailed in November, 1918 and later in May, 1923. In Alabama, organized labor fell off from 26 to 2 per cent; in Colorado, from 14 to 2.6 per cent; in Washington, from 100 per cent to 9.9 per cent; and in Illinois, generally conceded as the strongest organized labor center, from 100 to 87 per cent. In Pennsylvania and in Michigan there have been slight gains during the year.

Mr. Sargent estimates that in 1920, based on government statistics, the potential membership of the American Federation of Labor at 17,500,000, as against an actual membership at that time of 4,900,000. This was equivalent to approximately 28 per cent. Today, owing to lack of government figures, it is difficult to gage accurately the percentage. However, basing his calculations on production statistics, he said he believes the strength of the labor federation is about 20 per cent.

Talks on Foundry Practice

A notable feature of the program was an address by Enrique Touceda, consulting engineer for the American Malleable Castings association, entitled "A Talk on Gray Iron Practice and the Remedy for Some of the Troubles Encountered." He precluded his remarks with a brief review of conditions prior to what he termed the period of modern practice. About 30 years ago, he said, few founders knew anything about the control of the hardness or softness of their product through the proper proportioning of silicon and sulphur in cupola mixtures. The judgment of the founder was based wholly upon the appearance of the fracture of the pig iron or, in other words, the grade. Gradually, however, the true facts concerning the unreliability of mixture control by grade and the ease and satisfaction which this could be done by composition were recognized, he said, by the most progressive founders while with the introduction of chilled or machine cast pig iron others were forced to get in line owing to the impracticability of grading such iron by fracture.

The use of the electric furnace in the gray iron foundry is receiving increased recognition, particularly in duplexing, Professor Touceda declared. In speaking of the gray iron casting, he stated that it is the most complex of all ferrous products. This complexity of structure, however, while affecting strength, introduces no casting difficulties.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

CHARLES M. SCHWAB has accepted chairmanship of the New York committee for the Harding memorial campaign which purposes to raise funds for the erection of a mausoleum at Marion, O., for the late president; for the purchase of his old homestead as a national shrine and for the endowment of a chair in some central university giving instruction in public service to prospective government employes. Others who will serve on the New York committee are Elbert H. Gary, Dwight W. Morrow, George F. Baker Jr., and William Hamlin Childs.

* * *

C. E. Trommer, representative for Rogers, Brown & Co., who made the Chicago office his headquarters until he was transferred to St. Louis last spring, has returned to Chicago.

* * *

Arthur G. Henry, special representative of the Vanadium-Alloys Steel Co. Chicago, will resign from that company as of Dec. 1 to become sales engineer with the Perfection Tool Hardening Co., 1229 South State street, that city.

* * *

R. K. Boggs, purchasing agent of the Andrews Steel Co. and Newport Rolling Mill Co., Newport, Ky., has been addressing night high school classes in Cincinnati on purchasing agents and salesmanship.

* * *

J. C. Meers, for many years resident manager of Rogers, Brown & Co. at St. Louis, has been transferred to a similar position at Chicago. S. B. Brown, formerly of the Philadelphia office of the company, succeeds Mr. Meers as resident manager at St. Louis.

* * *

K. C. Li, president of the Wah Chang Trading Corp., New York and Shanghai, arrived in London from New York and has been joined by P. V. Jui, manager of the engineering department of the Wah Chang corporation in Shanghai. After investigating sources of iron, steel, and machinery for the Chinese market in Europe, Mr. Li and Mr. Jui expect to return to New York. Following a few weeks in the United States, Mr. Jui will return to his post in China.

* * *

S. A. Copp, superintendent for the past three years of the United States Aluminum Co., Alcoa, Tenn., has been promoted to the superintendency of the plant at Badin, N. C., effective Dec. 1. He will be succeeded at the Alcoa plant by I. C. Calderwood.

* * *

William Pigott, vice president of the Pacific Coast Steel Co., Seattle, has been re-elected president of the Pacific Foreign Trade council held recently at Portland, Oreg. Mr. Pigott has served in the same capacity since the organization of the council three years ago.

* * *

E. H. Welker, who has been identified with the Le Moyne Steel Co., Pittsburgh, for four or five years in charge of the Detroit district, has been elected vice president in charge of sales. The company's plant is located at Monongahela, Pa. Warehouses are conducted in Detroit, Cleveland, Cincinnati and New York.

* * *

Allen J. Hoffman, treasurer of the Federal Malleable Co., Milwaukee, has resigned and will become associated with the South Side Malleable Co., that city, as assistant secretary and treasurer and office manager. He will continue as president of the Appleton Car Mover Co., Appleton, Wis.

* * *

R. P. McCormick was recently appointed eastern sales manager for the Pawling & Harnischfeger Co., Milwaukee, manufacturer of excavators, cranes, machine tools, etc., with headquarters at 50 Church street, New York, and 605 Stephen-Girard building, Philadelphia.

* * *

R. D. Nye has been appointed by the Dominion Alloy Steel Corp., Ltd., Sarnia, Ont., in charge of preliminary engineering work necessary to the construction of a proposed alloy steel plant in that city. Mr. Nye has been associated with the construction of the alloy steel plant of the Central Steel Co., Massilon, O., and was formerly chief engineer with the United Alloy Steel Corp., Canton, O. He was educated at Ohio State university.

* * *

H. C. Keysor has been made works engineer at the Pittsburgh plant of the American Steel Foundries. Mr. Keysor for the past four years has been employed at the Alliance, O., plant of the same company acting as special investigator, assistant foundry foreman and inspector.

* * *

W. W. Phillips, recently appointed manager of the New York branch of the Colonial Steel Co., Pittsburgh, manufacturer of crucible and high grade open-hearth steel, was for several years salesman in the Rochester territory for that company. He succeeds H. C. Poole, recently appointed works manager.

* * *

Harry J. Rothrock has been made assistant foundry superintendent for the Deemer Steel Casting Co., New Castle, Del. For the last four years Mr. Rothrock has been connected with Taylor Wharton Iron & Steel Co. and during two years of that time was superintendent of the steel foundry department at Easton, Pa.

* * *

John W. Doty, president of the Foundation Co., sailed on Nov. 15 for Italy in connection with contracts recently obtained by the company for improvements in the Bay of Naples. Mr. Doty is expected to visit Japan before his return to this country, as the company is negotiating with Japanese firms for new construction in Peru and Colombia, South America.

* * *

Dean Mortimer E. Cooley of the engineering college of the University of Michigan, was given a testimonial dinner Nov. 23 at the Statler hotel in Detroit. The banquet was arranged by the Detroit Engineering society, the Detroit section of the American Society of Civil Engineers and the Detroit-Ann Arbor section of the American Institute of Electrical Engineers.

Honor Schwab

Who Emphasizes Importance of Human Engineering in Industry

American engineers are adding leadership in human engineering to their great and numerous achievements, said Charles M. Schwab at a dinner given in his honor at Philadelphia, Nov. 20, by the Engineers' club. He defined human engineering as the science of imbuing workmen with "the right spirit and a healthy orientation toward their work." He alluded to Henry Ford and other individuals as great human engineers. He recalled a saying of Andrew Carnegie to the effect industry is a three-legged stool—capital, management and labor—and without any one of them the whole structure will fall.

"This sort of engineer," said Mr. Schwab, "has taken the lead because he has directed his energies toward sound and amicable relations with labor. The people who labor are human beings full of sentiment, hopes and aspirations and are not to be treated like dumb, driven cattle. The fundamental problem of all industry is to so relate the human elements in the men who do the work to the work that they do, that the men themselves shall first of all be happy and healthy, and that they shall thus be able to operate their machines with good spirit and efficiency.

"Few things in our American life are more wonderful than the great enterprise Henry Ford has developed. Mr. Ford has taught us many new lessons in the handling of machinery and large scale production. But all of Mr. Ford's machinery and plans would have amounted to little had he not been able to build upon the foundation of satisfied and happy employes.

"During the war when I was placed at the head of the Emergency Fleet Corp. I realized that the need was not so much for machinery or more machinery, but it was to put spirit and power into the hearts, minds and muscles of the rank and file of the men who were doing the work. To build great plants and to erect huge machines would take time, and the war would not wait. Yet to put new life and spirit into the men who were doing the job could be accomplished in a short time.

"Hence, I paid but little attention to the mechanical and material end of the business. I devoted my time to going among the men, both the superintendents and the rank and file, and seeking to promote in them a spirit which would enable them to get miraculous results with the material at their command.

"Many people conceive the relationship between capital and labor as one of stress and struggle. They talk as though the interests of the two were different. My experience is that there can be no success in industry unless there is at least a measurable appreciation of what is so fundamentally true, namely, that the interests of labor and capital are identical.

"There is a distinct movement among our industries toward giving the men a greater voice in the management, toward securing for the employes representation with the management in the consideration of problems of mutual interest. There is a sincere effort being made to give every man the benefit of the economies and the improvements which his efforts make possible, and great progress is being realized in making men understand that their interests and the interests of the corporation with whom they work are the same.

"I am no optimist, and I foresee for America the greatest prosperity in her history. This is indeed to be the workshop of the world. The solution of the problem of human engineering is going to carry us forward to greater things. I do not mind if we are called a material people; I am proud of being a son of a material country, because this country has worked for and will work for the material advancement of the world."

Julian Kennedy who was among the speakers, was alluded to by Mr. Schwab as having done more for the iron and steel industry than any other living man. Mr. Kennedy spoke about his long friendship for Mr. Schwab which dated back 43 years to the time when they both worked under the tutelage of Andrew Carnegie.

"We were taught by Mr. Carnegie to keep in advance of the procession," said Mr. Kennedy. "He always wanted us to put in better machinery and get the cost down. He told us it was better to reduce the cost than to get a higher price for our product. Mr. Carnegie's strongest characteristic was his faith, the faith that we call optimism at the present time. He always made improvements in his plants when business was dull. Prices were low and deliveries good at such time, and there was plenty of time to do the work. Mr. Carnegie also taught us not to worry about mistakes; he wanted us to forget them and go ahead. He also believed that the quality of an executive is reflected by the quality of his lieutenants. How Mr. Schwab absorbed these teachings is reflected by the way he conducts his business."

Dr. R. H. Fernald, president of the Engineers' club, and dean of engineering at the University of Pennsylvania, presented to Mr. Schwab a certificate of honorary membership in the former body, explaining that this honor previously had been bestowed upon only 18 men in the 50 years of the club's history. Alba B. Johnson acted as toastmaster. About 600 prominent engineers were present, among them many prominent figures, including A. C. Dinkey, L. R. Lemoine, Guilliaem Aertsen, Samuel Rea, S. M. Vauclain, Admiral A. H. Scales, E. T. Stotesbury, Walter Wood, W. S. Pilling, Edward G. Budd, Agnew T. Dice, Admiral R. T. Hall and others well known in the industry.

Obituaries

FRANCIS FENWICK, president of Fenwick Frères & Co., Paris, importers of American machinery, especially foundry equipment, died recently. Mr. Fenwick had been prominently identified with Fenwick Frères & Co., since 1885. For many years this company has been agent in France and Belgium for the Tabor Mfg. Co., of Philadelphia.

* * *

John J. Fruin, president of the Fruin Drop Forge Co., Chicago, died recently. He was 52 years old.

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Marcus Bondy, secretary of the Bondy Auto Top Mfg. Co., Cleveland, died at his home in that city Nov. 21 at the age of 42 years.

* * *

Walter M. Taussig, vice president of the American Chain Co., and mayor of Yonkers, N. Y., died Nov. 21 at St. John's Riverside hospital after having shot himself in the brain. He was a brother of F. W. Taussig, noted economist and former chairman of the federal tariff commission.

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Harry R. Riley, a member of John J. Riley & Co., Brooklyn, N. Y., gray iron and brass founder, died at his home in Brooklyn, Nov. 21.

* * *

Charles D. Noyes, who had been associated with the Hartford Steam Boiler Inspection & Insurance Co., for 28 years and for some time as its chief inspector, died recently at his home in Wellesley Hills, Mass.

* * *

Richard W. Bailey, manager of construction for the American Bridge Co., New York, died Nov. 22 at the age of 60 years. He was connected with the American Bridge Co., since its formation being contracting manager at Philadelphia before going to Pittsburgh in 1910 as divisional contracting manager.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCORPORATION of the Beacon Pressed Steel Co., Inc., 86 Page street, Providence, R. I., was effected recently to carry on the manufacturing of light and medium pressed metal articles and parts, the limit being that of a press of 30-ton pressure. The company is manufacturing a safety device for power presses and high speed tapping machines. Sufficient equipment has been purchased to carry on the present scale of operations. George S. Cooper is president and treasurer and Ivar Larson is vice president and general manager.

* * *

THE Warren Foundry Co., Cutler street, Warren, R. I., general jobbing foundry, is making preparations to turn out all kinds of metal castings in addition to its regular line of gray iron products.

* * *

ALTON FILE CO., Alton, Ill., recently incorporated in Illinois, has been carrying on the manufacture of files and rasps for the past six months. The company which is capitalized at $30,000 is headed by M. D. Barker, Springfield, Ill.

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NUTLEY FOUNDRY CO., Passaic avenue, Nutley, N. J., manufacturer of brass, bronze, and aluminum castings, is now located in its new plant, which is about three times as large as its former one. The only loss effected by the recent fire was that of a few snap flasks, boxes, etc.

* * *

E P. SANDERSON CO., East Cambridge, Mass., jobber in iron and steel and products, is building a new plant on its property and also is enlarging the present structure by adding another floor. The new building will be used for a warehouse for storage of sheet metal, etc.

* * *

THE new plant of the Bessemer Galvanizing Works being constructed at Bessemer, Ala., is to cost $25,000, and will be a mill construction building, 100 x 120 feet. Work has already started, though all equipment has not been purchased. The company will galvanize structural steel, tanks, castings, etc. The address is 2321 Jefferson County Bank building, Birmingham, Ala.

* * *

EARL R. ISRAEL, formerly of the American Steel & Wire Co., Worcester, Mass., and now part owner of the American Wire Dye Co., also of Worcester, has started negotiations with others to manufacture high carbon wire at Millbury, Mass. A site has been selected and charter applied for.

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THE American Rolling Mill Co. has placed a contract with Arthur G. McKee & Co., Cleveland, for the installation of a patented revolving distributor on its East blast furnace at South Columbus, O. Its West furnace was equipped with a distributor some years ago. This will make a total of 142 blast furnaces equipped with the patented revolving top.

* * *

EQUIPMENT will be purchased by the Troy Foundry & Machine Co., Inc., Troy, N. Y., successor to West Side Foundry Co., to replace the molding shop which recently was damaged by fire. The damaged unit was but a small proportion of the total molding space but plans are under way to replace it. Frank H. Deal and George W. Walsh are receivers for the company.

* * *

A PLANT is nearing completion for the Belleville Stamping & Die Co., 100 South Sixteenth street, Belleville, Ill. The company will carry on a stamping and die business to punch out sheet metal parts for use particularly in the stove industry and similar manufacturing. George E. Baker is president of the company, R. Willman, vice president and A. E. Krebs, secretary and treasurer.

* * *

INCORPORATION of the Florin Foundry & Mfg. Co., Florin, Pa., was recently effected, with all common stock, totaling $125,000. Eight acres have been purchased on which to build a plant. Modern foundry equipment will be installed and capacity operations are assured from the beginning. Directors of the new company are: A. E. Koch, president of the Philadelphia Gas Range Co., Philadelphia and Newark; Paul A. H. Wharton, president of the Grand View Realty Co., Middletown, Pa., and E. M. Colquihoun, vice president and general manager of the Wincroft Stove Works, and president of the Enduro Porcelain Enameling Co.

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SEVERAL changes in personnel were made recently by the British Empire Steel Corp., Sydney, Nova Scotia. A. S. MacNeil was appointed general superintendent of all the corporation mines; Walter Herd was appointed chief mining engineer, and J. H. McCann, assistant general manager of the Dominion Coal Co., was promoted to the general managership.

* * *

STANDARD STRUCTURAL STEEL CO., 239 Homestead avenue, Hartford, Conn., fabricator of structural and ornamental iron work is moving from its present location to 1014 Wetherfield avenue, Hartford. Operations are to be started in the new plant about Dec. 1. New machinery and equipment is being added with the intention of doubling its present shop capacity.

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CONSTRUCTION of a new plant has been started for the West Coast Iron & Steel Works, Portland, Oreg. The new building will be on Nicolai street near Twenty-ninth and will increase capacity considerably. A modern 2-story industrial plant, the main buildings being being 75 x 200 feet will be ready early in January for occupancy. S. E. Westover, president of the company, states the new plant will be equipped to manufacture a complete line of boilers, to do sheet metal work and to handle machining.

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SCHUBERT-CHRISTY CONSTRUCTION & MACHINERY CO., Railway Exchange building, St. Louis, has been formed by Frank H. Schubert, district manager of the Wheeler Condenser & Engineering Co., and William G. Christy, secretary, St. Louis section of the American Society of Mechanical Engineers and formerly with the St. Louis Boat & Engineering Co. In addition to representing leading manufacturers of

power plant equipment, the new company will do general construction engineering work.

* * *

THE Cox Foundry Co., Bessemer, Ala., has taken over the plant there of the City Foundry Co., and is now operating the latter as a separate unit of the Cox plant. Charles H. Cox, is president and manager of the former concern. The Cox foundry manufactures soil pipe and fittings, while the City company produces a general line of building castings and castings for municipal work.

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AN ADDITION, 50 x 100 feet of concrete, is being built by the J. B. Foote Foundry Co., Fredrickstown, O., to provide for a grinding and cleaning room. The room now being used for that purpose will be used as a molding room, enabling the company to add about 10 more molders to the foundry. When the new room is completed approximately 35 molders will be employed.

* * *

STEVENSON BARN EQUIPMENT CO., Barton, near West Bend, Wis organized in 1918 to manufacture steel stanchions and other barn and stable fixtures, has accepted the offer of a syndicate in Freeport, Ill., to take over the business. The new owners have organized the Freeport Implement Co., and will transfer all of the Stevenson property to Freeport. The factory building and site are retained by the Barton company.

* * *

DIES for the manufacture of a patent automobile non-glare headlight by the Smith-Sauer Motor Co., 2436-38 South Michigan avenue, Chicago, are now in the course of being made. The manufacture of the lamps will be sublet to various lamp manufacturing companies. D. Underhill Smith is president of the newly incorporated company, Clark G. Sauer is treasurer and Edward I. Rothbart, secretary.

* * *

DIRECTORS of Truscon Steel Co., Youngstown, authorized the expenditure of $400,000 for extensions of the plant in that city. The new buildings are to be of the Truscon construction and are to cover 100,000 square feet or about 2½ acres, giving the company a total floor space of 16 acres at the Albert street plant. Work will start at once and will be finished about May 1. The additions will permit the increase of production of about 15 per cent in all departments and will increase the working forces by the same percentage. President Julius Kahn said indications are for heavy business in 1924 and to meet the increased demand the enlargement of the property was ordered.

Far Eastern Trade Now 25 Per Cent Above 1922

Washington, Nov. 27.—Figures just prepared by the far eastern division of the department of commerce indicate that the total trade of the United States with the Far East in the first nine months of this year increased more than 25 per cent over the corresponding period of last year, despite the unsettled conditions in China. The Far East now accounts for about 22 per cent of the total trade of the United States, compared with only 12 per cent 10 years ago.

Modern transportation facilities are rapidly bringing the Orient nearer to America's door, and it is believed almost certain the United States shall witness a trade development in the next decade that will outstrip the record of the last 10 years, in which this trade increased threefold.

In the full calendar year 1913 the United States took from the Far East commodities, mainly crude, valued at only $314,078,218, while during the first nine months of the present year, United States imports from that territory aggregated $835,990,611.

Exports to the Far East, which consist largely of manufactured products, have shown a similar growth in the same period, increasing from $194,159,465 during the full year of 1913 to $442,260,490 for the first nine months of 1923. The increased purchasing power of the peoples of the Orient, which has raised their standard of living, coupled with the industrial movements in Japan and India, have combined to cause this increased consumption of American manufactured products and machinery.

All the principal Far Eastern countries, with the exception of China and British India, took more goods from the United States during the first three quarters of 1923 than in the corresponding period of 1922, while their exports to the United States were greater in every instance. Japan, which heads the list of Far Eastern customers of the United States, took goods valued at $163,400,565 in the first nine months of 1923, compared with $155,127,603 in the corresponding period of 1922. In September, American exports to Japan were almost $10,000,000 greater than in September last year, a reflection of needs for rebuilding after the earthquake.

American Opportunities in Austrian Market

Washington, Nov. 27.—Should conditions in Germany continue critical, a much larger market for American products appears likely in Austria and the Balkan states, according to informotion received by the department of commerce from Trade Commissioner William Ford Upson. The Austrian market would absorb especially machine tools, machinery, leather, textiles and specialties. Austrian business men are reported to be starting for America.

The general condition of many Austrian industries has improved as indicated by a decrease of 5 per cent in unemployment during September, chiefly in the Vienna district. Profiting by the blockade of the Ruhr, the Austrian iron and steel industry is operating at full capacity.

Mill Merger Deferred

Chicago, Nov. 27.—Officers of the Acme Steel Goods Co., Chicago, have sent the following letter to their stockholders:

"This letter is notification that the proposed consolidation of the Acme Steel Goods Co. and the Inland Steel Co. has been indefinitely postponed. After the auditors had gone over the Acme and Inland books it was deemed advisable by the directors of both companies to run each company separately and not consolidate at this time."

A letter of similar purport is understood to have been sent to customers by the Milwaukee Rolling Mill Co., Milwaukee, which it was reported would also be taken over by the Inland Steel Co.

Cast Pipe Output Drops

Washington, Nov. 27.—Cast iron pipe production in September totaling 77,186 tons, was 7402 tons less than the total output in August which amounted to 84,588 tons, according to figures issued by the department of commerce. The September total is the lowest of the four months in which the bureau of census has been compiling these statistics. Shipments also fell off in September although not dropping below the July figure. Orders for pipe specified to be shipped from stock fell off as did orders for pipe to be made according to specifications.

	Produced tons	Shipped tons	Orders from stock tons	Orders from specifications tons
June	81,208	88,318	17,905	199,271
July	79,528	77,828	16,839	183,130
August	84,588	84,843	14,727	165,518
September	77,186	78,101	14,215	156,585

Buyers Delay Closing on Orders

Inquiries Grow Heavier but Actual Sales Remain Light—Inactivity Continues in Automotive Industry—Better Business Being Done in Used Machinery—Old Crane Inquiries Being Revived

INQUIRY for machine tools and shop equipment continues to improve. In some cases this is looked upon as an indication of potential business, while others consider it a method of obtaining prices on tools for inventories. Sales, during the week, have been light, some dealers, in fact, reporting a falling off in business for November over October.

The New York Central has increased its recent list to include approximately 100 tools, although no action has been taken on the first 17 tools reported several weeks ago. The Monon is inquiring for a tool room lathe. The Norfolk & Western may close soon on the list current for some time. Brief shutdowns now effective in some railroad shops may delay to some extent buying by various railroads.

Other industrial buyers include the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., the Bethlehem Steel Co., Bethlehem, Pa., the Brown Car Wheel Works, Buffalo, the Firestone Tire & Rubber Co., Akron, O., and the Chicago Pneumatic Tool Co., Detroit. Industrial inquiries are current from the General Electric Co., the Standard Sanitary Mfg. Co., and several New England manufacturers.

Dealers in second hand machinery are enjoying better business in a majority of cases, although the volume is not up to expectations. The crane market is dull, although several jobs which were dropped in 1920 again have been revived.

New York Central Adds to Recent Large Inquiry

NEW YORK, Nov. 27.—The list of the New York Central has been extended to include approximately 100 machines. It is understood that this is all the equipment covered by the present appropriation, and for that reason little further inquiry is expected to develop at this time. All equipment, as stated in a recent issue, will be purchased through the company's local offices, although the greater portion of the list is for its western lines. Action is expected before Jan. 1.

Other railroad activity is confined largely to efforts on the part of several railroads in obtaining figures needed in estimating next year's budget. A recent railroad buyer is the Missouri Pacific, which has closed on a 400-ton wheel press and car wheel borer to an eastern builder. The Norfolk & Western may start closing this week on its list of 25 machine tools, pending for some time. Industrial buying includes a 44-inch boring mill for the Bethlehem Steel Co., Bethlehem, Pa., and an axle lathe and a 300-ton wheel press for the Brown Car Wheel Works, Buffalo.

Dullness in the crane market has been most pronounced. Orders have been light, as at anytime in weeks, with inquiry listless. Some fair sized business is pending, however, and in the case of at least a couple of proposals, including the two 125-ton electric cranes for the Public Service Corp., Newark, N. J., early action is expected.

Calendar and Selected News of Plant Liquidations, Wholesale Offerings, Auctions of Used and New Equipment, Etc., Page 92, Classified Machinery Section.

Buying Being Deferred

PITTSBURGH, Nov. 27.—Only a fair amount of activity is noted in connection with machine tools and cranes in this locality. Most buying is being deferred until after inventory time or until after the first of the year. The Westinghouse Electric & Mfg. Co. made a start on the placing of orders on its fourth quarter list, some of which were noted last week but now is holding up orders on the remainder. The latest order placed was for a 60-inch planer. Other sales of new equipment this past week include a shaper, a lathe, a 34-inch shaper, a 3-foot radial drill and three or four band saws as well as a disk grinder, all individual orders. The Pennsylvania railroad bought a punch and shear for Mingo Junction, O.

The outstanding development of the market, however, is a list issued by the Standard Sanitary Mfg. Co. for the machine shop equipment in connection with its new plant at Baltimore. This list calls for in excess of 30 items, including 12 woodworking tools, six lathes, two radials, two milling machines and one each shaper, planer, bolt cutter, pipe machine, hack saw, etc. Prices on drill presses and grinders likewise are asked. Inquiries are plentiful for good used machinery. Intermittent buying occurs as desirable units are available. A Wheeling, W. Va., user closed on a 3½-foot radial drill, a grinder and two small bench drills. Other single sales comprise a 30-inch drill, 13-inch lathe, a cutting off machine and some steam engines.

A used 5-ton crane was sold to a St. Louis manufacturer. Two or three individual crane orders are noted this week, the Pittsburgh Screw & Bolt Co. buying two. The crane order from the Koppers Co., listed last week as going to the Shaw Electric Crane Works was for installation at Trumbull Steel Co.'s by-product coke plant, Warren, O. The 10-ton locomotive crane reported last week going to the Browning Co., Cleveland, was bought by the McKeesport Iron & Metal Co., McKeesport, Pa.

Sales of foundry equipment, particularly ladles, tumbling barrels and molding machines, have been fairly numerous. Recent ladle sales by the Whiting Corp. were made to the Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, O.; Marshall Furnace Co., Marshall, Mich., and the Auto Specialties Co., St. Joseph, Mich. It also sold tumbling barrels to the Western Electric Co., Chicago; Carr Bros., Inc., New York, and the Bucyrus Co., South Milwaukee, Wis., while one of its No. 1 cupolas was ordered by the Insulating Products Co., Chicago, and a No. 10 by the Leonard & Baker Stove Co., Taunton, Mass. The Herman Pneumatic Machine Co. reports the sale of four large molding machines to the Commonwealth Steel Co.,

Granite City, Ill.; two to the Richardson & Boynton Co., Dover, N. J., and one each to the Industrial Works, Bay City, Mich., and the Valley Mold & Iron Corp., Sharpsville, Pa.

Inquiry Is Better

CHICAGO, Nov. 27.—Planers continue the most active of the heavier machine tools, one Chicago firm having 18 live inquiries and another firm 10. Inquiry for a total of 26 disk grinders is reported. Deals are on for three boring mills. Special demand is noted for sheet metal machinery, including heavy power brakes and power squaring shears. The Monon railroad is inquiring for one 18-inch tool room lathe with a 10-foot bed equipped with taper and braking-off attachment, to be motor driven, with motor using 3 phase, 60 cycle, 440 volts. The approach of inventory time is being felt, although most machinery houses state that a few tools steadily are moving off their floors. The outlook for the next year is considered good by most machinery dealers. Activity in secondhand and rebuilt machinery is fair.

Sales Continue To Lag

CLEVELAND, Nov. 27.—Sales of new machinery continue to lag, and although a few dealers report a better condition, many state that sales for November will not equal the business done in October. Inquiries, however, have increased, a condition which has brought about a better feeling in the industry. In some cases this increase is not taken as an indication of potential business, but rather a desire for cost figures for use in taking inventories.

No new railroad business is showing in this district, and the fact that the Pennsylvania has closed several shops for a period of from two to three weeks dampens the belief that railroad buying in volume is near. Several local companies are quoting on the New York Central list, but no action has been reported. Buying by the automotive industry is light, although the allied industries are closing on some tools. The Firestone Tire & Rubber Co. closed on eight machines during the week, the order being divided several among Cleveland companies. Several other companies closely associated with the automobile industry have purchased tools during the week. The Chicago Pneumatic Tool Co. has purchased one large and two small turret lathes for installation at Detroit.

Business in used machinery continues at about the same rate as reported last week, sales in this department being heavier as a rule than in new machinery. One company liquidating a tool plant in this district sold several large machines to users in the Cleveland territory during the week.

Inquiry Shows Improvement

BOSTON, Nov. 27.—Better inquiry for machine tools is reported by nearly all Boston dealers and while actual sales of new machines still are low, sentiment in the trade unquestionably has improved. This is encouraging when the time of year is considered.

New England tool manufacturers are receiving at a fairly good rate. Twelve Massachusetts manufacturers report full time operation. A Worcester, Mass., manufacturer is in the market for five or six tools including two lathes. The General Electric Co. again has asked for delivery dates on its large list for the Lynn, Mass., plant. The Saco-Lowell shops are expected to close soon for their Lowell, Mass., plant addition. Another textile machine manufacturer is inquiring for two tools. Scattered inquiry in the hands of dealers totals from eight to 10 new tools.

Used equipment dealers report a slackening during the week. November, however, will show a good total in this field. In new tools November will be one of the low months of the year. Sales of the past week include three machines for a Springfield, Mass., manufacturer and several sheet steel working tools for an eastern Massachusetts fabricator. A manufacturer of power hacksaws reports a marked increase in orders.

Better Conditions Found

CINCINNATI, O., Nov. 27.—A slightly better tone is noted in the machinery market in this district. Sales of machine tools and shop equipment have increased materially during the past week, although orders in many cases have been confined to single tools. The volume of inquiries also has increased and this condition has caused dealers and manufacturers to believe that the remaining weeks of 1923 will witness a fairly active buying movement.

Inquiries recently reported call for planers, lathes, milling machines and drill presses. The tools being sold cover practically all lines of work in many industries. Some sales are being closed with the automobile industry, although no large inquiries are developing from this source. A local manufacturer has received an order for a 48-inch open side planer from the United Shoe Machinery Co., Brocton, Mass., while another builder sold a 36-inch planer to the Pennsylvania railroad for Columbus, O.

The demand in the second-hand market also is better, although no large sales are reported for the week.

Crane Awards and Inquiries of the Week

Orders Placed

One 25-ton 8-wheel standard-gage steam-operated crane for Nickel Plate railroad to the Orton & Steinbrenner Co.

Two 18-ton steam-operated cranes for the Naugle Pole & Tie Co., Chicago, to the Orton & Steinbrenner Co.

One 7-ton gasoline-operated crawling-tread crane for the Lehigh Portland Cement Co., Mitchell, Ind., to the Orton & Steinbrenner Co.

One 25-ton 8-wheel standard-gage steam operated crane for the Richmond, Fredericksburg & Potomac railroad to the Orton & Steinbrenner Co.

One 10-ton electric traveling crane for the Michigan Stamping Co., to the Whiting Corp.

One 20-ton handpower crane for the Northeastern Power Co., Milwaukee, to the Whiting Corp.

One 23-ton crane for a Midwest public utility to the McMyler-Interstate Co., Bedford, O.

One 20-ton locomotive crane for the John Griffiths & Son Co., Chicago, to the Brown Hoisting Machinery Co.

One 22½-ton locomotive crane, 50-foot boom, equipped with bucket, magnet and generator, for the Wabash railroad, to Industrial Works, Bay City, Mich.

One 22½-ton crane, 50-foot boom, equipped with bucket, for the Buick Motor Co., Flint, Mich., to Industrial Works, Bay City, Mich.

One 5-ton handpower crane, 27-foot span, for the Kennebec Water division, Waterville, Me., to the Whiting Corp., Harvey, Ill.

One 10-ton, 3-motor crane, 70-foot span, for the Michigan Stamping Co., Detroit, to the Whiting Corp., Harvey, Ill.

One 10-ton crane crawler type for a contractor in New York to the McMyler-Interstate Co., Bedford, O.

One 10-ton for the Pittsburgh Screw & Bolt Co., Pittsburgh, to the Alliance Machine Co., Alliance, O.

One 10-ton with 70-foot span combination magnet and grab bucket crane, double trolley, for the American Sheet & Tin Plate Co., Vandergrift, Pa., to the Alliance Machine Co., Alliance, O.

One 5-ton for the Pittsburgh Screw & Bolt Co., Pittsburgh, to the Cleveland Crane & Engineering Co., Wickliffe, O.

One 10-ton electric traveling crane for the Michigan Stamping Co., Detroit, to the Whiting Corp.

One 10-ton, 60-foot span crane for the National Metal Molding Co., Ambridge, Pa., to the Pawling & Harnischfeger Co., Milwaukee.

Orders Pending

One 15-ton electric crane, 72-foot span, for the Tottenville Copper Co., Tottenville, Staten Island, action expected shortly.

One 10-ton crane, 70 to 75-foot span for the Wheeler Condenser & Engineering Co., Carteret, N. J.; bids being taken.

Industrial Business Changes Recently Announced

PAWLING & HARNISCHFEGER CO., Milwaukee, manufacturer of excavators, cranes and machine tools, has appointed R. M. McCormick eastern sales manager with headquarters at 50 Church Street, New York, and 605 Stephen-Girard building, Philadelphia.

* * *

The Cox Foundry Co., Bessemer, Ala., has taken over the plant of the City Foundry Co. there.

* * *

The Osborn Engineering Co. announces the removal of its offices to 7016 Euclid avenue, Cleveland.

* * *

Chester Ranger, Phillips, Me., has bought the skewer mill there which was formerly the property of Bell Mfg. Co.

* * *

National Copper & Steel Tank Works, Inc., Chicago, has changed its name to National Blow Pipe & Copper Works, Inc.

* * *

The Fireproof Products Co., Inc., has moved its principal offices and warehouses to 536-48 E. 133rd street, New York.

* * *

The Standard Welding Co., Pine Bluff, Ark., now is located in the Tom King building, 821 State street. W. L. McClellan is proprietor.

* * *

A branch office and warehouse have been opened in Milwaukee at 112 Fowler street by the Page Belting Co. N. L. Kuehn is manager.

* * *

The American Range & Foundry Co. has leased 7000 square feet at 2318 South Santa Fe avenue, Los Angeles, to be used as an assembly plant and warehouse.

* * *

Brown Welding & Machine Co., Breckenridge, Tex., will establish a branch at 310 East Third street, Tulsa, Okla., with Cleve Johnson as local manager.

* * *

General Steel Corp., Detroit, has moved its offices from 1320 Dime Bank building to 10 Warren avenue. Better facilities are offered for jobbing and warehouse business in new location. Arthur I. Tushbant is president, and Alfred E. Gutman, secretary.

* * *

Bardach Iron & Steel Co., Inc., Norfolk, Va., on Nov. 1 opened a branch office at room 201 Munsey building, Baltimore, with Richard MacKay as manager.

* * *

The Amalgamated Products Co., 25 Broadway, New York, has been appointed to represent the Mahoning Valley Steel Co. in the sale of that company's products in the New York territory.

* * *

The Modern Showcase & Fixture Co., 162-178 Locust street, Columbus, O., will move from that site about Jan. 1 to the recently acquired property of the Ohio Tractor Co., West Goodale street.

* * *

The Shawinigan Products Corp., 110 William street, New York, manufacturer of carbides, acids, ferroalloys, etc., has opened a branch office in Pittsburgh, at 945 Oliver building.

* * *

Caspers Tin Plate Co., Chicago, has changed its location from 2259 Oakdale avenue to 1438 West Thirty-seventh street. A new and larger warehouse and office building is at the latter location.

* * *

The Cleveland Duplex Machinery Co., Inc., Cleveland, on Dec. 1, will move from its present site at 1224 West Sixth street, to the Penton building, West Third street and Lakeside avenue, the company having outgrown its present location.

* * *

The York Foundry & Engine Works, York, Neb., operator of a gray iron foundry, was taken over by Gellert Bros., Chicago. The new company is composed of D. N. and J. H. Gellert, the latter being the new resident manager.

* * *

Waterhouse & Lesterd Co., 564 Howard street, San Francisco, has been appointed distributor in California for the Heald Machine Co., R. K. LeBlond Machine Tool Co., Fosdick Machine Tool Co., Curtis Pneumatic Machinery Co., Beaudry & Co., and Burt Mfg. Co.

* * *

Boyce & Veeder, Inc., Farmingdale, L. I. manufacturer of carbon remover for gasoline engines, has purchased 100 x 250-foot plant of the Gutta Percha & Rubber Mfg. Co., and will make several alterations.

* * *

B. F. Sturtevant Co., Inc., Hyde Park, Boston, manufacturer of fans, fan systems, and allied products, has opened a plant in Camden, N. J., at Thorne & Copewood streets. This plant will be the headquarters of the Philadelphia division.

* * *

The Fire Proof Products Co., Inc, has moved its principal offices and warehouse to 536-548 E. 133d street, New York. The company handles fireproof building products and does general waterproofing, insulating and reinforcing work.

* * *

The Akron Cultivator Co., 230 North Union street, Akron, has transferred its operations to the Empire Plow Co. factory, East Sixty-fifth street, Cleveland, according to H. E. Halman, manager of the Akron company, consolidation having been effected between the two companies.

* * *

The New England Enamel Co., with headquarters in New York and plant at Middletown, Conn., has established a new southeastern branch in the Candler building, Atlanta, Ga., with G. Fred Hyde in charge as manager for the district. The company plans to open other suboffices in the Southeast within the next year.

* * *

Edgar T. Ward's Sons Co., established its general offices at its warehouse in Newark, N. J., on Nov. 10, having been moved from Cedar and Westmoreland streets, Philadelphia, to 400 Frelinghauysen avenue, Newark. The other warehouses of the company are located at Boston, Philadelphia, Detroit, Cleveland and Chicago.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

ALBANY, ALA.—H. & H. Machine Works, First avenue, plans opening a new plant which it has been forced to seek by a greatly increased business. The company intends to buy site and build plant.

LITTLE ROCK, ARK.—The N. O. Nelson Co., 502 East Second street, manufacturer of plumbing supplies, has awarded contract for constructing machine shop, warehouse, etc., at a cost of $80,000. Sanders & Ginnochio, Hall building, is architect.

LOS ANGELES—The American Range & Foundry Co. has leased 7000 square feet of space at 2318 South Santa Fe avenue to be used for assembly and warehouse. The company will assemble all its ranges for Pacific coast distribution in that plant.

LOS ANGELES—Southern Pacific Railway Co., Fifth street and Central avenue, will take bids soon on 80 x 500-foot locomotive erecting shop to contain 24 engine pits equipped with 200-ton and two 15-ton traveling cranes, at a total cost of more than $300,000. G. W. Boscke is chief engineer.

PUTNAM, CONN.—Work has been started on a brick and steel 1-story 98x156-foot plant addition to the Putnam Foundry Co.

QUITMAN, GA.—The Southern Machinery Co. is starting construction on two buildings to replace plant recently damaged by fire. F. C. Underwood is president. Lathes, planers and other equipment are to be installed. Noted Nov. 15.

SAVANNAH, GA.—Central of Georgia railroad plans rebuilding its shops which were damaged by fire recently with loss of about $1,000,000. Coach shop planing mill and other buildings were totally damaged. W. A. Winburn is president.

CHICAGO—C. Stecher Co. plans $25,000 1-story brick machine shop at 2542-58 Greenview avenue. H. E. Gallup is architect.

CHICAGO—Fidelity Corp., 326 May street, was incorporated for $10,000 to manufacture and import and deal in automobile accessories by J. W. Cameron and Arthur Cameron.

CHICAGO—Remco Plumbing Co., 1003-6 North Clark street, has been incorporated for $25,000 to make, buy, sell, rent plumbing and heating fixtures, by Abel Levy, Roy E. Mathews and G. Paul.

CHICAGO—Meisner Mfg. Co., 618 Sherman street, has been incorporated for $15,000 to manufacture and deal in electrical and mechanical apparatus, by Earl C. Peirce, Ralph T. Brengle and James T. Watson.

CHICAGO—Industrial Power & Heating Engineers Co., 402 Reaper block, has been incorporated with 500 shares non par value stock to build and deal in oil burners, etc., by John Finelson, Elizabeth J. Knowe and Peter Knowe.

CHICAGO—Bids are in on a $350,000, 5-story, 120 x 250-foot, brick and stone warehouse for Standard Sanitary Mfg. Co., 3716-26 Iron avenue. P. S. Kaulbeck, 14-30 Peoria street, is manager.

CHICAGO—Acme Steel Screen & Mfg. Co., 1211 Clybourn avenue, has been incorporated for $150,000 to manufacture and deal in all kinds of building materials, by John O. Wagner, E. D. Wagner and C. J. Bloomquist.

FT. WAYNE, IND.—Wayne Tank Pump Co. will start constructing at once factory addition costing about $50,000.

INDIANAPOLIS—W. J. Holliday & Co., 326-90 West Georgia street, plans constructing 300 x 400-foot steel fabricating plant and 3-story warehouse building at 600 West McCarthy street. J. S. Holliday is president.

DES MOINES, IOWA—International Harvester Co., plans $250,000, 4-story 150 x 182-foot brick warehouse and office building. Alex Adams, Seventh and Vine streets is manager.

HUTCHISON, KANS.—Midwest Iron & Metal Co. has been incorporated here for $5000.

LOUISVILLE, KY.—Schwartz-Bailen Metal Roofing Co. has been incorporated by Morrison Bailen, N. H. and Sol Schwartz.

NEW ORLEANS, LA.—Engineering department of the port commission is preparing plans for constructing tower, unloader and conveyor system at coaling plant.

AUGUSTA, ME.—The Brunswick Hardware Co., has been incorporated for $20,000. Forrest R. Trworgy, Danforth, Me., is president.

BALTIMORE—A power plant estimated to cost more than $35,000,000 has been outlined to the Maryland public service commission. Behind the project are the Youghiogheny River Power Co. and the Youghiogheny Water & Electric Co. The plan prepared by Charles B. Hawley contemplates the development of approximately 100,000 horsepower and the construction of a controller or water power dam and tunnel.

WORCESTER, MASS.—Arcade Malleable Iron Co. has been incorporated for $500,000.

WORCESTER, MASS.—J. E. Snyder & Son Co. has been incorporated for $150,000 to manufacture and deal in machinery.

DETROIT—Ideal Demountable Wheel Corp. has been incorporated for $20,000 to manufacture all kinds of wheels and demountable rims for wheels, by the Ideal Demountable Wheel Co., Ltd., Montreal, Rodolphe Perrault, 3050 Montclair avenue.

DETROIT—The G. C. Spring Co., headed by Christian Girl, has taken over the plant of the Detroit Foundry Co., East Grand boulevard. Forging machines and treating furnaces will be installed. The purchase will increase present occupied floor area by 35,000 square feet.

HOUSTON, MINN.—Edwin Peterson is planning to erect a foundry here.

MINNEAPOLIS—Fire on the second floor of the Gust and Lagerquist & Sons Foundry, Thirteenth avenue and Water street Northeast, caused a damage of about $10,000.

JOPLIN, MO.—Joplin Electric Steel Co. has been incorporated for $10,700 by J. A. Liningerm, president and George R. Chapman, secretary.

KANSAS CITY, MO.—Carbondale Machine Co. has been incorporated by N. H. Hiller Hiller, as president and E. N. Holcomb as secretary.

ST. LOUIS—Holdinghaus Steam Motor Co. has been incorporated for $2,000,000.

ST. LOUIS—The Green Foundry Co., 3003 North Broadway, awarded contract for constructing 1 and 2-story 215 x 530-foot car wheel foundry to cost about $100,000.

NEBRASKA CITY, NEB.—Nebraska City Iron Works has installed new equipment increasing production. L. J. Ertl is manager.

BATAVIA, N. Y.—Batavia Iron Works has been incorporated with 3000 shares no par value stock, by J. E. Ferguson, F. W. Allan and W. W. Stroh.

BUFFALO, N. Y.—H. & H. Steel Co. has been incorporated for $10,000 to make tools, by F. H. and F. X. Reuter and F. Herzog. Brendel, Bagot & Magoffin is attorney.

NEW YORK—Continental Can Co., 61 Broadway, has awarded contract to Barney-Ahlers Construction Corp. for erection of a $500,000 addition to its Jersey City plant. Francisco & Jacobus, 511 Fifth avenue, is architect.

DURHAM, N. C.—A provision is being made by the city council for an appropriation of $1,500,000 for its proposed hydroelectric generating plant on the Flat river. R. W. Rigsbee is city manager, and W. M. Pratt is engineer in charge.

CHARLOTTE, N. C.—Icy-O-Metal Products Co., has been incorporated for $300,000 with $300 subscribed capital by Marcus Bloom, W. W. Blount and E. C. Stothart.

CLEVELAND—Henry Miller Furnace & Foundry Co. plans $40,000, 1-story, 42 x 58-foot brick addition at 3471 East Forty-ninth street. T. E. Henry, 825 Long avenue, is president.

MANSFIELD, O.—Humphrey Mfg. Co., 201 East Fifth street, W. G. Moore, president, is contemplating constructing a brick foundry building.

MARIETTA, O.—W. F. Robertson Steel & Iron Co., care of Mr. White, Elm and Commerce streets, Cincinnati, contemplates brick factory building.

RAVENNA, O.—The Jones Bros. Structural Steel Co. plans enlargment of its plant to double present capacity. Work has been started on plant.

WARREN, O.—The Youngstown Pressed Steel Co. of New York, Inc., has been incorporated here with $10,000 capital, by J. R. Harper, L. M. Montgomery, F. A. Baxter, C. A. Manchester and Franklin B. Powers.

YOUNGSTOWN, O.—The Commerical Steel Co. has been incorporated to manufacture iron and steel products with 1000 shares no par

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angeles	4.30c
New York	3.54c
Philadelphia	3.47c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	4.10c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.47c
St. Louis	3.35c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angeles	4.40c
New York	3.64c
Philadelphia	3.57c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	4.20c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston, 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angeles	3.65c
New York	3.64c
Philadelphia	3.57c
Philadelphia, 3/16-inch	3.82c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	4.25c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.45c
Chicago	4.00c
Cincinnati	4.10c
Cleveland	3.60c to 4.06c
Detroit	4.15c
Los Angeles	5.20c
New York	4.59c
Philadelphia	4.10c
San Francisco	5.25c
Seattle	5.00c
St. Louis	4.10c
St. Paul	4.25c

NO. 28 BLACK SHEETS

Boston	5.45c
Buffalo	5.00c
Chicago	4.70c
Cincinnati	4.90c
Cleveland	4.50c to 4.65c
Detroit	4.85c
Los Angeles	6.50c
New York	4.50c to 4.70c
Philadelphia	5.15c
San Francisco	5.80c
Seattle	6.00c
St. Louis	4.85c
St. Paul	4.95c

NO. 28 GALVANIZED SHEETS

Boston	6.60c
Buffalo	6.10c
Chicago	5.85c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.00c
Los Angeles	7.30c
New York	5.50c to 5.70c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	6.75c
St. Louis	6.00c
St. Paul	6.10c

BANDS

Boston	4.315c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	5.20c
New York	4.39c
Philadelphia	4.27c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	5.10c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider	
20 gage and heavier	4.27c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD ROLLED STEEL

Boston (rounds)	4.35c
Boston (shapes)	4.85c
Buffalo (rounds)	4.70c
Buffalo (shapes)	5.20c
Chicago (rounds)	4.55c
Chicago (shapes)	5.05c
Cincinnati (rounds)	4.50c
Cincinnati (shapes)	5.00c
Cleveland (rounds)	3.90c to 4.10c
Cleveland (shapes)	4.60c
Detroit (rounds)	4.30c
Detroit (shapes)	4.80c
Los Angeles (rounds)	5.90c
New York (rounds)	4.40c to 4.65c
New York (shapes)	4.90c to 5.15c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
Pittsburgh	4.25c
San Francisco (rounds)	5.75c
Seattle (rounds)	5.50c
St. Paul (rounds)	4.80c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

	Black	galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-6-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

SCRAP PRICES, PAGE 1512, IRON AND STEEL PRICES, PAGE 1453, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1508

value. McKain & Ohl, 1106 Mahoning Bank building are interested.

YOUNGSTOWN, O.—Youngstown Boiler & Tank Co. plans constructing two buildings, 40 x 400 feet and 30 x 200 feet to be ready for use early next year. Much additional equipment will be installed. J. P. Keene is president.

PORTLAND, OREG.—Northwest Copper & Sheet Metal Works, has been incorporated for $10,000 by Adolph, Rudolph and Louis Groeger.

PORTLAND, OREG.—Truscon Steel Co. will proceed immediately with construction of modern plant, first building to be 120 x 132 feet of steel and concrete.

CHELTENHAM, PA.—Plans will be issued shortly by the Roland Shovel Co. to replace buildings recently badly damaged by fire.

CHESTER, PA.—Federal Steel Foundry Co. Reaney street, was damaged by fire recently with loss of about $23,000.

EASTON, PA.—The Pennsylvania Edison Co. has arranged for a bond issue of $800,000, a portion of the proceeds to be used for power plant extensions.

ERIE, PA.—Sims Mfg. Co. foundry has been damaged by fire recently with loss of about $5000.

ERIE, PA.—Plans are being drawn for Erie Steam Shovel Co., for 2-story brick and stone factory. Osborn Engineering Co., 7016 Euclid avenue, Cleveland, is architect.

HARRISBURG, PA.—Plans have been completed by the Harrisburg Gas Co. for a $30,000 steam power plant; $17,000 compressor and blower building.

HAZELTON, PA.—The Phoenix Utility Co., 61 Broadway, New York, will erect a large substation for the Pennsylvania Power & Light Co., at Bethlehem, Pa.

JEANETTE, PA.—G. M. Johnson Mfg. Co., G. M. Johnson, president, contemplates rebuilding plant damaged by fire. A 1-story, 40x140-foot, $20,000 building for manufacture of miners specialties is planned.

LANCASTER, PA.—General Metal Products Co. has been incorporated for $15,000 with John T. McGovern as treasurer.

MERCER, PA.—The Rezner Mfg. Co., E. F. Rezner, president, operator of an iron foundry, has taken bids for constructing $30,000, 1-story factory addition.

MONACA, PA.—Patternson Gear Shift & Brake Co. has been incorporated with $100,000 capital.

NEW CASTLE, PA.—Pennsylvania Engineering Works, steel fabricator, is in the market for additional equipment.

PHILADELPHIA—Jones Machine Tool Works, Inc., has been incorporated for $250,000.

PHILADELPHIA—Work will be started shortly on the erection of a concrete warehouse for F. G. Vogt & Sons, Inc.

PHILADELPHIA—Bids have been received for the erection of a plant for the Electric Development & Machine Co.

PHILADELPHIA—Alcorn Combustion Co. was incorporated for $100,000 to manufacture furnaces, by H. E. Potter.

PHILADELPHIA.—Ford Motor Co. has closed options for purchase of about 68 acres

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

at Sixty-third street and Schuylkill river. It expects to erect assembly plant for Philadelphia and export business.

Business in Canada

VANCOUVER, B. C.—J. Overlin, Portland, Ore., plans a plant on Granville Island for the manufacturer of motor trucks, etc.

BRAMPTON, ONT.—The Beaver Truck Corp., Hamilton, Ont., has awarded the contract for foundation of $150,000 factory here to John Patterson.

BRANTFORD, ONT.—The Brantford Roofing Co., Ltd., has taken over the Canadian Roofing Mfg. Co., Ltd., Windsor, which in August was badly damaged by fire. The machinery is being removed to Brantford.

DUNDAS, ONT.—Kaustine Co., Ltd., manufacturer of sanitary ware, etc., has awarded general conrtact to F. G. Haskings & Co., for erection of factory here.

FOREST, ONT.—The town council is having plans prepared for the construction of waterworks plant to cost $100,000. Three stage centrifugal pumps will be installed.

HAMILTON, ONT.—The Canadian Westinghouse Co. is erecting a foundry on Aberdeen avenue, costing $250,000, and is in the market for furnace, cranes, molds, etc.

INGERSOLL, ONT.—T. E. Bissell Co., whose plant was recently damaged by fire, is in the market for metal working machinery, lathes, drills and special machinery for machine shop.

OTTAWA, ONT.—Compagnie de Poinconneuse Automatique de Fiches, Ltd., is asking for machinery and tools for the manufacture of self-feeding gang punching machines. G. E. Robert, 301 King Edward avenue, is purchasing agent.

PEMBROKE, ONT.—C. Devlin & Son, 274 Pembroke road, is in the market for machinery and general equipment for foundry.

PEMBROKE, ONT.—Desrochiers Bros., 83 Lake street, is in the market for machinery and tools for machine shop.

FORT WILLIAM, ONT.—The Canada Steamship Co., Victoria Square, Montreal, Que., will purchase equipment for coal handling plant here.

ST. THOMAS, ONT.—The Wabash railroad proposes to construct a 20-stall roundhouse here.

STRATFORD, ONT.—Abra-Kerr, Ltd., has been incorporated to manufacture and deal in motors, motor cars, trucks, etc., with $40,000 capital stock; by Oscar W. Thompson, John F. Scully, John D. Kerr and others of Kitchener, Ont.

SWASTIKA, ONT.—The township of Teck will build electric lighting plant here. M. Campbell, Kirkland Lake, Ont., is clerk.

TORONTO, ONT.—Walsh Electric Co., 456 Church street, has purchased a site at 255 Church street, and proposes to wreck the present building and erect a factory next spring.

TORONTO, ONT.—Alfred Maguire, chairman of the board of control, will receive bids until Jan. 15, 1924, for one air compressor; one 3,000,000-gallon centrifugal sludge pump and motor.

TORONTO, ONT.—The W. C. Hunt Brass Works, Ltd., has been incorporated to carry on business as manufacturer and dealer in brass, copper, metal products, etc., with $200,000 capital stock; by William C. Hunt, Isaac Johnson, Leonard B. Johnson and others.

TORONTO, ONT.—The A. H. C. Johnson Co., Ltd., has been incorporated to manufacture and deal in automobile accessories, machinery, tools, etc., with $40,000 capital stock; by Vernon J. Callen, Horace N. Switzer, Henry Catley and others as provisional directors.

TORONTO, ONT.—H. J. Logan Co., Ltd., has been incorporated to manufacture and deal in machinery, implements, rolling stock and to carry on business as machinist, foundrymen metal worker, boiler maker, etc., with $200,000 capital stock; by Robert Wherry, William Zimmerman, Wendell H. Osborne and others as provisional directors.

WALKERVILLE, ONT.—Canadian Bridge Co.

(*Concluded on page* 1508)

New Trade Publications

SKYLIGHT CLEANER—A special report has been issued of a survey made for the Skybryte Co., Cleveland, on the use of this company's product by the Joseph T. Ryerson & Son., Inc., in cleaning skylights of its Jersey City, N. J., warehouse. Figures are given to show the saving effected by the use of the cleaner.

FRICTION CLUTCH—Various types of friction clutches are described and illustrated in a 56-page booklet issued by the W. A. Jones Foundry & Machine Co., Chicago. Numerous tables are included, chief among which are those giving list prices and specifications. The booklet is illustrated with views of types of clutches manufactured by the company.

LUBRICATION—A 52-page booklet recently issued by the Dearborn Chemical Co., Chicago, contains information designed to aid the purchaser of lubricating oils and greases in choosing the grades that will help toward developing maximum efficiency in power equipment. The laboratory where the lubricants are tested is described and illustrated and the methods used in testing are included.

GRINDERS—Grinding machines for the rapid and accurate production of flat surfaces are described in a pamphlet recently issued by the Graham Mfg. Co., Providence, R. I. The grinding is accomplished by the face of an abrasive ring. At present the machines are constructed in the 12 and 18-inch sizes. The pamphlet is illustrated with front and back views of the machine and sectional diagrams of the machine and parts.

RECORDING INSTRUMENTS—A pamphlet published by the Esterline-Angus Co., Indianapolis, presents answers to five everyday questions. The questions answered are as follows: How can we tell how much time our employes lose in getting started to work? How can we tell how much time we lose due to our anticipating quitting time? How can we tell when are the losses due to friction load in our plant? How can we tell how much power and light we use at night? How can we tell what our maximum electrical demand is?

REFRACTORIES—For the convenience of engineers using data on heat insulation products, the Celite Products Co., Chicago, has produced many of its blueprints and charts on small notebook sheets, punched and ready for insertion in the standard loose leaf binder. These include charts showing comparative conductivities of various refractory products as well as losses through various wall construction. The new style of sheets will replace the regular literature and standard size blueprints which have been furnished by this company.

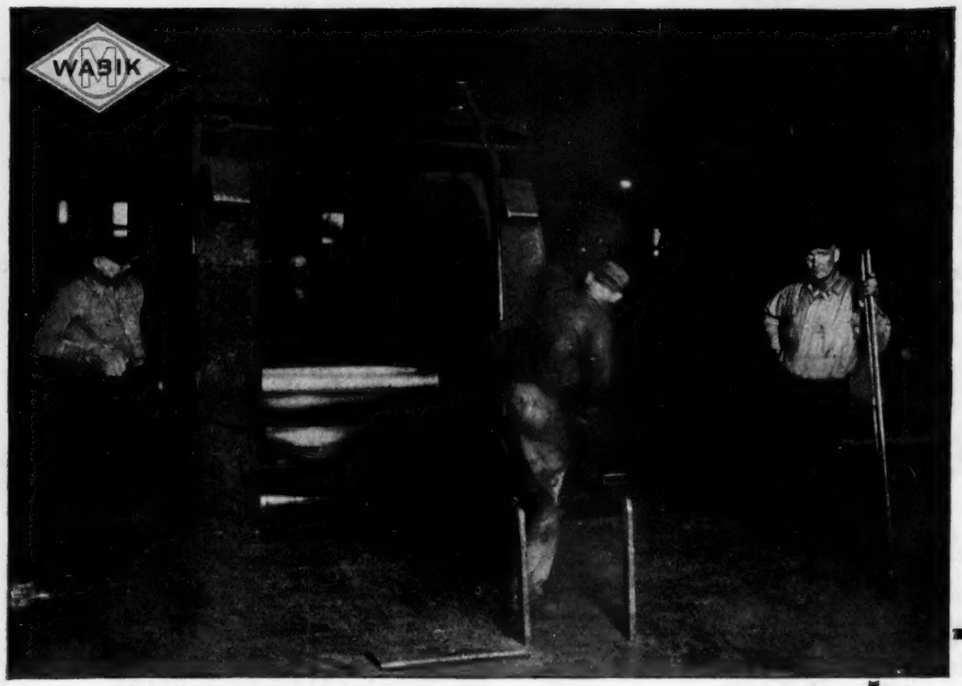
THREADING MACHINES—A 38-page booklet has been issued by the Geometric Tool Co., New Haven, Conn., describing and illustrating the various types of tools manufactured by this company. Three sizes of threading machines are built, namely ½, ¾ and 1½-inch, and are designed to thread work which cannot be handled with the ordinary screw machine. A double spindle threading machine which was recently introduced also is described. This machine is built for threading work in which the threading time for both pieces is sufficient to allow the operator to chuck and start the second piece while the first is being finished.

STOKERS—Underfeed stokers are described and illustrated in a 16-page booklet recently issued by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This stoker is built in all types and sizes to meet the specifications for industrial and central station requirements. The types include double and single dump grates, also double and single roll ash discharging devices. According to the company this type of stoker can be built to fit the requirements of the particular setting. Views of the various parts of the stoker are shown as well as sectional diagrams showing the side elevation of boiler and stoker with various types of auxiliary apparatus installed.

WELDING—A short treatise on the economy and value of welding in industry is contained in a 62-page booklet issued by the Wilson Welder & Metals Co., Inc., New York. Various topics pertaining to welding are discussed, including why arc welding is used, advantages of arc welding, new types of machines and the importance of using correct metals. Considerable space is given to a discussion of the repair work done on German ships interned in the United States harbors during the war. The last portion of the booklet is devoted to illustrations and brief specifications of the welding units manufactured by this company. The publication is well illustrated with views of numerous welding jobs.

AIR HOISTS—The Hanna Engineering Works, 1765 Elston avenue, Chicago, has issued a 16-page booklet describing the construction of the air hoists manufactured by this company and also giving capacities and lifting weights of the various types. Two distinct classes of air hoists are described, namely the pendent type with suspension lugs in the top head, loop, swivel and hook at the lower end of the piston rod and valve attached to the lower end of the cylinder; and the bracketed type, with supporting feet for attaching to cranes, columns, walls, ceilings and platens. The end of the piston rod of the latter type is threaded and may be equipped with yokes for either one, two or three sheaves for multiple lifts. The publication is illustrated with views of the various types of hoists and also the sectional diagrams of the different styles. Several specification tables are included.

WABIK METAL



View taken in our No. 8 Shee Mill, South Plant.

Highest grade equipment, highly skilled workmen, inflexible methods—absolute accuracy and uniformity is the result.

SHEET BARS
INGOTS

VITREOUS ENAMELING

STOVE DOOR PANELS: SPLASHER BACKS: BROILER PANS: TABLE TOPS: REFRIGERATORS: SIGNS: and other flat work.

WABIK METAL SHEETS, like all other "Mansfield" Products, are rolled from our "Bottom-poured" ingots.

They are very low in sulphur.

Other Specialties:

AUTOMOBILE SHEETS

Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS

PICKLED and ANNEALED ENAMELING STOCK
For Kitchen Utensils

MILK CAN STOCK

ELECTRICAL SHEETS

"Mansfield" Steel is the ultimate in Sheet Bars and in Sheets. It means satisfaction to the many users. Constant study of the needs of users, and continuous application of the results of such study, in the way of improved methods in our plants has established a reputation for reliability unsurpassed.

SHEET BARS
INGOTS

MANSFIELD SHEET & TIN PLATE COMPANY

MANSFIELD, OHIO

DISTRICT SALES REPRESENTATIVES

The L. D. Rockwell Co., 1106 National City Bldg., New York, N. Y.
Mr. D. B. Coey, 1018 Standard Oil Building, Chicago, Ill.
Mr. Geo. W. House, 1822 Ford Building, Detroit, Mich.
The L. D. Rockwell Co., 1201 National Bank Building, Cleveland, O.
Walter G. Clark, Inc., 106 N. Third St., St. Louis, Mo.
Walter G. Clark, Inc., 313 American Bank Bldg., Kansas City, Mo.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Mr. Herbert P. Hill, 401 Continental Trust Bldg., Washington, D. C.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.

Business in Canada

(*Concluded from page* 1506)

will build addition to its galvanizing plant to cost $8000.

AMQUI, QUE.—Audette is in the market for drill press and tools for garage.

LEVIS, QUE.—L. N. Haurd, 129 Commerciale street, proposes to construct electric power development plant of 17,000 horsepower capacity on the Megiscane river, and also to build pulp and paper mills to cost $2,000,000.

MONTREAL, QUE.—Goddard & Appleby, 664 Union avenue, will purchase equipment for automobile repair shop.

MONTREAL, QUE.—The Yellow Cab Co., Ltd., sales office, 120 St. James street, subsidiary of the Yellow Cab Mfg. Co., Chicago, Ill., plans a manufacturing plant here to supply the Empire and Canadian trade. Noted Nov. 15.

MONTREAL, QUE.—The All Clear Windshields, Ltd., is in the market for complete equipment for factory to manufacture automobile accessories. W. C. Nicholson, 15 Vendrome avenue, is purchasing agent.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron	$6.45
Mesabi bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent	10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent	13.25 to 16.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.50
Algerian low phosphorus, 52 to 54 per cent	10.00 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent	13.50
Swedish foundry or basic, 66 to 68 per cent	9.25 to 10.50
Spanish foundry or basic, 50 to 54 per cent	9.00

Manganese Ore

Prices do not include duty at rate 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....41½ to 42 cents c.i.f. tidewater
Indian, minimum 47 per cent.....40 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....41 cents c.i.f. tidewater

Fluor Spar

85 and 5% grade

Washed gravel, Kentucky and Illinois mines, per net ton	$20.00 to $23.50
Washed gravel, imported, duty paid eastern tidewater, per net ton	$20.00

Rivets

Structural rivets, Pittsburgh.. 2.70c to 2.75c
Rivets, 7/16-in. and smaller.....65 and 10 off to 70%

Nuts and Bolts

NUTS
(Up to 1¼ and 1½ inches inclusive)

Hot pressed square or hexagon blank.....$4.25 fo list
Hot pressed square or hexagon tapped.....$4.00 off list
Cold punched square or hexagon blank.....$4.00 off list
Cold punched, square or hexagon,.....$4.00 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger.....75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller..80 and 5 off
Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
(¾ x 6 inches, smaller and shorter)

Rolled thread.....60 and 5 off
Cut thread.....50, 10 and 5 off
Larger and longer.....50, 10 and 5 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread.....60.10 and 5 off
Cut thread.....60 and 5 off
Larger and longer.....60 and 5 off
(¾ x 4 inches, cold punched nuts)
Cut thread.....50, 10 off
Larger and longer.....50, 10 off
Lag screws.....65 and 5 off
Plow bolts Nos. 1, 2 and 3 heads.....50 and 10 off
4 to 10 heads.....50-10 + 20 off
Flat and round head stove bolts.....75, 10 and 5 off
Other stove bolts.....75 and 5 off
Tap bolts.....25 and 10 off
Bolt ends with hot pressed nuts.....60 and 5 off
Bolt ends with cold punched nuts.....45, 10 and 5 off
Blank bolts.....60 and 5 off
Rough stud bolts with nuts.....50, 10 and 5 off

WASHERS

Wrought washers.....$5.00 to 5.10 off

Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS

	Black	Galvanized
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
7 to 12-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	..

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap welded)
(Effective April 19, 1923)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch	51 off
1¼ and 1½-inch	48 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	38 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING
Base Discounts

Carbon, 0.10 to 0.20 per cent.	83 off
Carbon, 0.30 to 0.40 per cent.	81 off
Carbon, 0.40 to 0.50 per cent.	net price

Plus differentials and extras for cutting

SEAMLESS STEEL LOCOMOTIVE AND SUPER-HEATER TUBES
(Effective April 19, 1923)
Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

SCRAP PRICES, PAGE 1448, WAREHOUSE PRICES, PAGE 1442, IRON AND STEEL PRICES, PAGE 1397

SIVYER CASTINGS
DEPENDABLE

Combination bracket and bearing casting for removable truck bodies

Fewer parts, less assembling with Sivyer Steel Castings

WITH the single casting shown above, a manufacturer of truck bodies replaced a part that formerly was built up of a casting and a number of pieces of angle steel bolted together. The single Sivyer Casting reduced his assembling time appreciably and gave him in addition a simpler and better part. His reliance on Sivyer Steel Castings to achieve this result was primarily due to the fact that the new casting is intricate in design, and has thin sections that are difficult to produce with ordinary foundry methods. Another manufacturer, producing trucks and trailers, found that with one Sivyer Casting he could replace a part that used to be built up with fifty-four pieces of material, including twenty-nine bolts, eight steel straps, four iron castings, two U-bolts, two strap bolts, two hook bolts, two steel plates, and five pieces of wood. A number of other automotive manufacturers are using Sivyer Steel Castings at a decided profit to replace parts that were formerly built up.

Send Blue Prints

A number of aggressive manufacturers have divided their steel parts into three general classes: those that can be profitably forged; those that cannot be forged economically, or at all, but can be cast in ordinary steel; and those that can be cast most reliably and economically in Sivyer Electric Steel.

The last class includes especially castings with thin and sharply varying sections, and castings that have to be true to pattern, clean and smooth in order to fit the assembly with the minimum of finishing.

With Sivyer Electric Steel we have been able to show certain engineers very decided advantages and economies, not only as against ordinary steel castings and hammered forgings, but also as against malleable castings and fabricated steel.

A certain manufacturer formerly fabricated rocker beams for a crawler chassis by welding two stampings and then pressing in, and welding, sections of steel tubing. The shortcomings and unnecessary expense of this method were not realized until it was found that the stampings did not have the body required to carry certain desirable attachments. Forgings were impractical. Open hearth practice does not permit the high temperatures necessary for casting thin sections such as those of the design in question. The manufacturer's organization naturally turned to Sivyer Electric Steel. It proved to have all the qualities desired and effected an appreciated reduction in the final cost of the part.

In a number of other cases we have been able to free certain engineers from the handicaps of hammered forgings and in effect give them much greater freedom in design.

We are specially interested in making experimental castings for manufacturers. If you will send us your blue prints for troublesome parts, together with a statement of your difficulties, we will study the problems involved and recommend possible solutions without obligation on your part.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Iron and Steel Production

Compiled By IRON TRADE REVIEW

Pig Iron

	-Stacks- No.	In	—Output— Total	Av. daily
1907				
January	376	311	2,174,801	70,155
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,249,732	
1908				
January	398	139	1,081,813	34,897
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,718,579	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,201
October	413	309	2,589,681	83,538
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,325,099	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,768
March	417	310	2,588,736	83,508
April	418	291	2,477,700	82,590
May	419	279	2,374,802	76,607
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,791	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,416
Total			26,845,902	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,863
April	421	220	2,044,904	68,163
May	421	206	1,871,888	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,787,800	89,929
February	423	306	2,578,670	92,095
March	423	278	2,762,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,816,825	90,865
June	422	283	2,616,883	87,229
July	422	264	2,558,275	82,525
August	424	260	2,537,018	81,839
September	425	258	2,494,098	83,137
October	425	244	2,539,924	81,933
November	424	225	2,229,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,024	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	357	3,238,970	104,483
September	431	342	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,723
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,778
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,120
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,468
September	434	317	3,124,308	104,143
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,929,394	68,906
March	436	103	1,594,866	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	436	69	954,901	30,802
September	435	84	985,795	32,859
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,645,804	53,090
February	429	139	1,630,180	58,220
March	429	155	2,035,908	65,674
April	429	161	2,070,161	69,005
May	427	175	2,309,348	74,495
June	427	191	2,362,455	78,748
July	427	170	2,403,030	77,517
August	427	143	1,810,665	58,408
September	427	189	2,024,008	67,466
October	428	218	2,629,655	84,827
November	428	241	2,846,110	94,870
December	428	253	3,083,520	99,468
Total			26,850,844	
1923				
January	428	261	3,228,226	104,136
February	424	278	2,993,918	106,925
March	424	295	3,523,595	113,664
April	423	311	3,547,012	118,233
May	423	322	3,868,486	124,790
June	424	322	3,667,868	122,262
July	418	299	3,684,677	118,860
August	418	270	3,448,886	111,254
September	418	254	3,117,526	103,917
October	418	245	3,142,642	101,375

Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934
1921	19,184,084	559,713	19,743,797
1922	34,568,418	1,034,508	35,602,926

Monthly Ingot Output

Gross Tons

1922	84.15 per cent of capacity	Calculated total
January	1,593,482	1,891,857
February	1,745,022	2,071,772
March	2,370,751	2,814,667
April	2,444,513	2,902,240
May	2,711,141	3,218,794
June	2,634,477	3,127,775
July	2,487,104	2,952,806
August	2,214,582	2,629,256
September	2,373,779	2,818,261
October	2,872,415	3,410,265
November	2,889,297	3,430,309
December	2,779,890	3,300,416
Total	29,116,453	34,568,418
1923	95.35 per cent	
January	3,644,629	3,822,369
February	3,294,264	3,454,918
March	3,858,675	4,046,854
April	3,760,997	3,944,412
May	4,000,695	4,195,800
June	3,574,567	3,748,890
July	3,350,829	3,514,241
August	3,506,755	3,677,771
September	3,161,964	3,316,166
October	3,382,986	3,547,966

Hidden Values

TO attempt to learn the quality of the products manufactured within the walls of a busy industrial plant by merely looking at the outside would be impossible and ridiculous. No more so, however, than to attempt to judge the dependability of a locomotive crane by merely looking at it.

Far down in the heart of every crane bearing the Brownhoist name lies the secret of its quality and dependability. Built into every part of every Brownhoist is something that even the shrewdest buyer cannot detect by casual observation. This is the careful choice of materials and the precision of design and manufacture.

The Brownhoist name-plate on a locomotive crane is not only a guarantee of fine materials but it also means that to these materials has been added a manufacturing skill of the highest order. Nowhere, on work of this type, will you find more accurate machine work or more exacting care in assembly.

To make locomotive cranes of better quality, greater dependability and a longer useful life are the ideals toward which Brownhoist is constantly working. The measure of success attained is best evidenced by the records for dependability and economy of operation that have been made by Brownhoist cranes on all kinds of work.

If you are interested in the economical handling of materials, just write us.

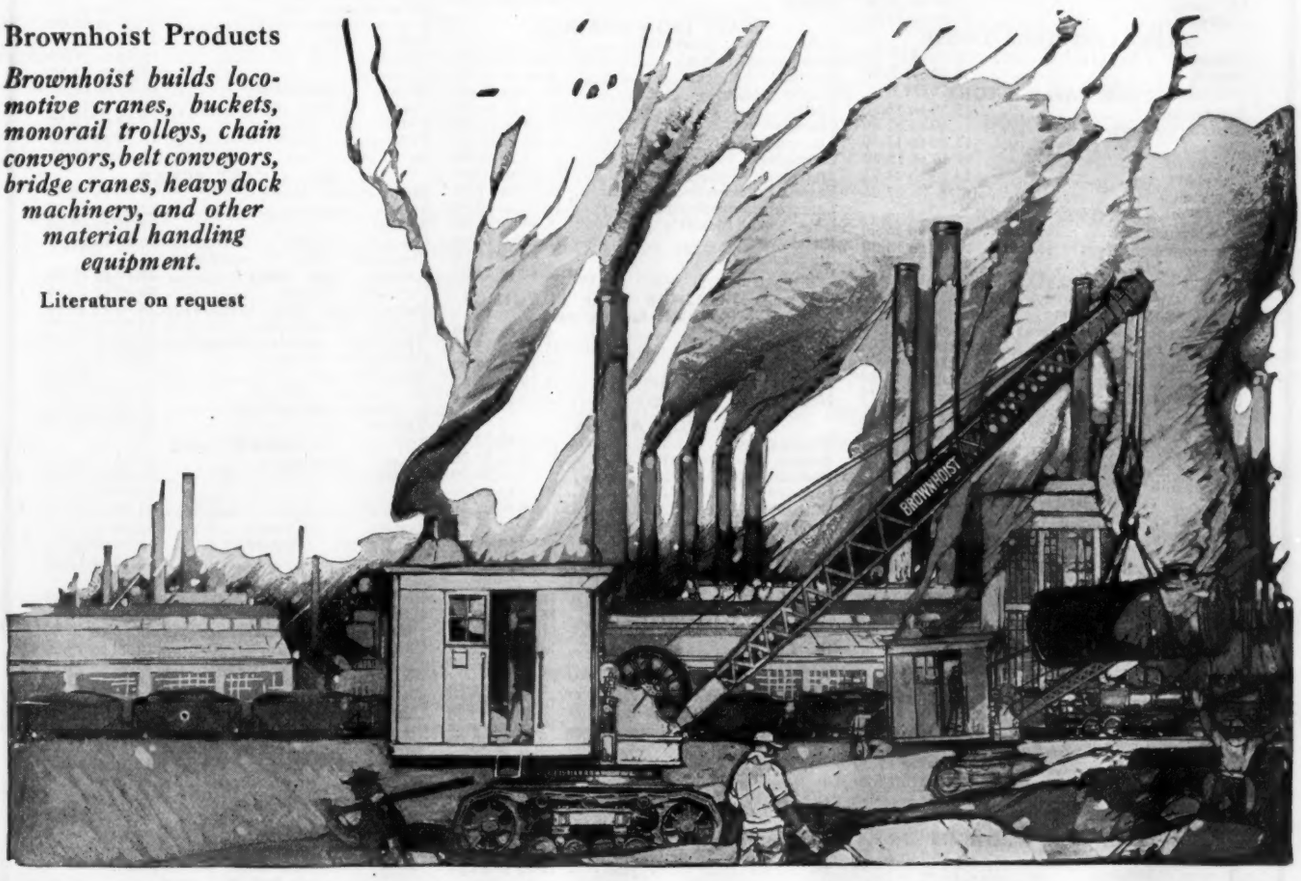
The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans

Brownhoist Products

Brownhoist builds locomotive cranes, buckets, monorail trolleys, chain conveyors, belt conveyors, bridge cranes, heavy dock machinery, and other material handling equipment.

Literature on request



BROWNHOIST

MATERIAL HANDLING EQUIPMENT

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 14.00
Boston (dealers)	10.50 to 11.00
Buffalo	14.50 to 15.50
Chicago	14.50 to 15.00
Cleveland	15.25 to 15.75
Cincinnati	12.75 to 13.00
Detroit (dealers)	12.50 to 13.00
Eastern Pennsylvania	15.50 to 16.00
New York (dealers)	11.50 to 12.00
Pittsburgh (dealers)	16.00 to 16.50
St. Louis	14.25 to 14.75
Valleys (nominal)	16.25 to 16.50
No. 1 railroad steel New York (dealers)	12.00 to 12.50

COMPRESSED SHEETS

Buffalo	12.50 to 13.00
Chicago	11.25 to 11.75
Cleveland	13.00 to 13.25
Detroit (dealers)	10.00 to 10.50
Pittsburgh	14.75 to 15.25
Valleys	14.50 to 14.75

BUNDLED SHEETS

Buffalo	$15.00 to 15.50
Cleveland	11.00 to 11.50
Cincinnati	10.00 to 10.50
Detroit	7.50 to 8.00
Eastern Pennsylvania	12.00
Pittsburgh	13.50 to 14.00
St. Louis	7.50 to 8.00
Valleys	12.50 to 12.75

SHEET CLIPPINGS, LOOSE

Chicago	6.50 to 7.50
Detroit	6.50 to 7.00

STEEL RAILS, SHORT

Birmingham	15.50 to 16.50
Boston (dealers)	11.00 to 11.50
Chicago	17.00 to 17.50
Cincinnati	17.50 to 18.00
Cleveland	14.25 to 14.75
St. Louis	16.75 to 17.25

STOVE PLATE

Birmingham	15.00 to 16.00
Boston (consumers)	15.00 to 16.00
Buffalo	16.00 to 16.50
Chicago	18.00 to 18.50
Cincinnati (net iron)	9.50 to 10.00
Cleveland	15.25 to 15.75
Detroit (net ton) (dealers)	13.00 to 13.50
Eastern Pennsylvania	16.00 to 17.00
New York (dealers)	12.50 to 13.00
Pittsburgh	14.00 to 14.50
St. Louis	15.25 to 15.75

LOW PHOSPHORUS

Buffalo	20.00 to 21.00
Cincinnati	13.50 to 14.00
Eastern Pennsylvania	21.00 to 22.00
Pitts, billets and bloom crops	19.50 to 20.00

SHOVELING STEEL

Chicago	14.25 to 14.75
Pittsburgh	13.00 to 13.50
St. Louis	13.75 to 14.25

KNUCKLES, COUPLERS, SPRINGS

Chicago	18.50 to 19.00
Eastern Pennsylvania	18.00 to 19.00
Pittsburgh	18.50 to 19.00
St. Louis	17.50 to 18.00

FROGS, SWITCHES, GUARDS

Chicago	14.50 to 15.00
Eastern Pennsylvania	15.50 to 16.00
St. Louis	14.50 to 15.00

BOILER PLATE, CUT

St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	16.50 to 17.00
St. Louis	14.50 to 15.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	13.00 to 13.50
Boston (dealers)	12.00 to 12.50
Buffalo	15.00 to 16.00
Cleveland, No. 1	13.00 to 13.25
Chicago No. 1	16.00 to 16.50
Chicago, No. 2	14.75 to 15.25
Cincinnati, No. 1	12.50 to 13.00
Detroit, No. 2	12.50 to 13.00
Eastern Pennsylvania	17.50 to 18.00
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	13.00 to 13.50
Pittsburgh, No. 2	16.00 to 16.50
St. Louis, No. 1	13.50 to 14.00
St. Louis, No. 2	14.00 to 14.50

WROUGHT PIPE

Boston (dealers)	10.00 to 10.25
Buffalo	11.00 to 12.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.50 to 11.00

YARD WROUGHT

Boston	10.00 to 10.50
Eastern Pennsylvania	15.00 to 16.00

CITY WROUGHT

New York, long	12.50 to 13.00

BUSHELING

Buffalo	12.50 to 13.00
Chicago, No. 1	12.25 to 12.75
Chicago, No. 2	7.50 to 8.00
Cincinnati No. 1	10.00 to 10.50
Cleveland, No. 1	10.50 to 10.75
Cleveland, No. 2	8.00 to 8.25
Detroit, No. 1	10.00 to 11.00
Detroit, No. 2 (new)	10.00 to 10.50
Detroit, No. 2 (old)	7.50 to 8.00
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh, No. 1	14.00 to 14.50
St. Louis, No. 1	14.00 to 14.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	6.50 to 7.00
Buffalo	8.50 to 9.00
Chicago	6.50 to 7.00
Cleveland	11.25 to 11.50
Cincinnati	9.00 to 9.50
Detroit (dealers)	8.00 to 8.50
Eastern Pennsylvania	12.00 to 12.50
New York (dealers)	8.00 to 8.50
Pittsburgh	11.50 to 12.00
St. Louis	7.75 to 8.25
Valleys	12.00 to 12.25

CAST IRON BORINGS

Birmingham (chemical)	17.00 to 17.50
Birmingham (plain)	9.00 to 10.00
Boston (chemical)	9.00 to 10.00
Boston (dealers)	7.00 to 7.50
Buffalo	11.50 to 12.00
Chicago	10.50 to 11.00
Cincinnati	10.00 to 10.50
Cleveland	11.25 to 12.00
Detroit (dealers)	10.00 to 10.50
Eastern Pennsylvania	11.00 to 11.50
Eastern Pennsylvania	12.00 to 12.50
New York (dealer's price)	8.00 to 8.50
Pittsburgh	13.50 to 14.00
St. Louis	11.00 to 11.50
Valleys	13.00 to 13.25

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	6.50 to 7.00
Cleveland	11.25 to 12.00
Detroit (dealers)	9.50 to 10.00
Eastern Pennsylvania	10.50 to 11.00
New York (dealers)	7.00 to 7.50

IRON AXLES

Birmingham	22.50 to 23.00
Boston (consumers)	31.00 to 32.00
Buffalo	28.00
Chicago	28.50 to 29.00
Cincinnati	21.50 to 22.00
Eastern Pennsylvania	25.00 to 30.00
New York (dealers)	25.50 to 26.00
St. Louis	27.50 to 28.00

IRON RAILS

Buffalo	18.00 to 19.00
Chicago	18.50 to 19.00
Cincinnati	13.50 to 14.00
St. Louis	14.50 to 15.00

PIPES AND FLUES

Chicago	9.50 to 10.00
Cincinnati	9.50 to 10.00
Cleveland	10.00 to 10.25
St. Louis	9.50 to 10.00

RAILROAD GRATE BARS

Buffalo	15.50 to 16.00
Chicago	16.75 to 17.25
Cleveland	15.25 to 15.75
Eastern Pennsylvania	16.00
New York (dealers)	14.00 to 14.50
St. Louis	12.75 to 13.25

FORGE FLASHINGS

Boston (dealers)	8.50 to 9.00
Chicago, small	10.00 to 10.50
Cleveland, small	10.75 to 11.25
Cleveland, large	10.00 to 10.50
Detroit (dealers)	9.00 to 9.50

FORGE SCRAP

Boston (dealers)	6.50 to 7.00
Chicago	14.75 to 15.25
Eastern Pennsylvania	12.50 to 13.00

ARCH BARS AND TRANSOMS

Chicago	21.50 to 22.00
St. Louis	19.50 to 20.00

ANGLE BARS—IRON

Chicago	21.50 to 22.00
St. Louis	20.00 to 20.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	8.00 to 8.50
Buffalo	12.00 to 13.00
Chicago	12.00 to 12.50
Cleveland	12.00 to 12.50
Eastern Pennsylvania	12.50 to 13.50
Pittsburgh	14.50 to 15.00
St. Louis	10.50 to 11.00

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (consumers)	18.00 to 20.00
Buffalo	16.00 to 17.00
Chicago	19.50 to 20.00
Cleveland	17.50 to 18.00
Eastern Pennsylvania	19.00 to 20.00
New York (dealers)	15.00 to 15.50
Pittsburgh	18.00 to 18.50
St. Louis	18.50 to 19.00

SHAFTING

Boston (consumers)	18.50 to 19.00
Chicago	21.00 to 21.50
Eastern Pennsylvania	20.00 to 21.00
New York (dealers)	14.50 to 15.00
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	17.50 to 19.00
Birmingham, iron	16.00 to 17.00
Boston (consumers)	20.00 to 21.00
Buffalo, iron	15.50 to 16.50
Chicago, iron	18.50 to 19.00
Cincinnati	13.00 to 13.50
Eastern Pennsylvania	18.50 to 19.50
New York iron (dealers)	15.50 to 16.00
Pittsburgh, iron	17.00 to 17.50
Pittsburgh, steel	18.50 to 19.00
St. Louis, iron	17.75 to 18.25

NO. 1 CAST SCRAP

Birmingham, cupola	17.50 to 18.50
Boston (consumers)	22.00 to 23.00
Buffalo	18.00 to 19.00
Chicago, cupola	20.25 to 21.25
Cincinnati No. 1 machinery cupola (net tons)	18.50 to 19.00
Cleveland, cupola	20.00 to 20.50
Detroit (net ton) (dealers)	16.00 to 16.50
Eastern Pennsylvania, cupola	19.00 to 20.00
New York, cupola (dealers)	17.00 to 17.50
Pittsburgh, cupola	18.50 to 19.00
San Francisco	28.00
St. Louis, railroad	19.00 to 19.50
St. Louis, agricultural	19.00 to 19.50
Valleys	21.00 to 21.50

HEAVY CAST

Boston (consumers)	18.00 to 19.00
Buffalo	14.00 to 15.00
Cleveland	14.00 to 14.25
Detroit (automobile) (net ton)	21.00 to 21.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	16.50 to 17.00
Pittsburgh	16.50 to 17.50

MALLEABLE

Boston (railroad)	18.00 to 19.00
Buffalo	17.00 to 18.00
Chicago, railroad	19.50 to 20.00
Chicago, agricultural	19.00 to 19.50
Cincinnati, agricultural	14.00 to 14.50
Cincinnati, railroad	14.50 to 15.00
Cleveland, agricultural	19.00 to 19.25
Cleveland, railroad	19.25 to 19.50
Detroit (dealers)	16.00 to 16.50
Eastern Pennsylvania, railroad	16.50 to 17.00
Pittsburgh, railroad	17.50 to 18.00
St. Louis, agricultural	15.50 to 16.00
St. Louis, railroad	15.50 to 16.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	15.00 to 16.00
Boston (dealers)	11.00 to 12.00
Chicago	16.00 to 16.50
Cleveland	15.50 to 15.75
Detroit	12.00 to 12.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	14.00 to 14.50
Pittsburgh district	18.00 to 18.50
St. Louis	15.25 to 15.75

LOCOMOTIVE TIRES

Chicago	17.00 to 18.00
St. Louis	15.50 to 16.00

LOW PHOSPHORUS PUNCHINGS

Chicago	16.00 to 16.50
Eastern Pennsylvania	20.00 to 21.00
Pittsburgh	19.50 to 20.00